

The Dental Digest.

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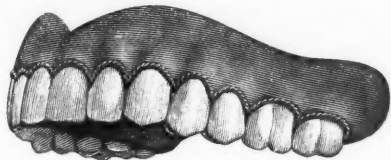
Original Contributions.

FESTOONED GUMS.

By M. L. FAY, D.D.S., BUFFALO, N. Y.

The accompanying cut illustrates a very simple and easy, yet effective mode of making a carved or festooned gum or an artificial denture, without the tedious carving by hand which involves considerable time and patience. The method of procedure is as follows:

Arrange the teeth and wax up the case as desired, but leave the necks a little exposed, and with a closely-woven cotton string, which has been drawn through melted wax and allowed to cool, festoon



the necks of the teeth as shown in cut, pressing the string between them with any instrument suitable for the purpose. Then with a warm spatula unite the string to the wax and smooth up the case with a mouth blow-pipe, which will draw the wax up on the string and give pleasing results. Invest and pack the case, removing the string with the wax.

When ready to finish, trim up with a sharp instrument the thin margins of rubber overlapping the teeth and polish with pumice and a stiff brush-wheel. This will reduce the prominence of the festoon and make it very lifelike. Do not polish the pink rubber with the fine wheel, as the effect is much better when left dull.

THE DENTIST UP TO DATE.

BY JOE S. REED, SULLIVAN, IND.
DEDICATED TO L. A. STEWART, D.D.S., SULLIVAN, IND.

I.

I heeded not the admonition,
Shakespeare gives in words of love:
"Better bear our present ailings
Than fly to those we know not of."
I speak therefore with intense feeling
Of my experience of late:
Alas! alas! I've been the victim
Of the "Dentist Up to Date."

II.

All have read of chained Prometheus,
In the poet's tragic lays,
And the cruel strange devices
Of the "Inquisition Days."
All of these were merely playthings,
I don't hesitate to state,
For they cannot hold a candle
To the "Dentist Up to Date."

III.

How those cruel ancient monarchs
Would have gloried in the rig
Of the lilliputian grindstone
On that whirring whirligig;
Would have bartered half their kingdoms
To have drunken in their fill,
To observe the face contortions
From that automatic drill.

IV.

While this drill was still exploring
I was driven to observe,
That whatever else I'm lacking
I have quite sufficient nerve;
And I'm firm in the conviction,
Had I nerves but few or much,
The aforesaid tooth tormentor
Would keep easily in "touch."

V.

I found his lances dull as hackles,
Yet he didn't deign to whet,
But his crosscut saws, I noticed,
Had been recently reset.
And his little loaded mallet
He kept plying all the while,
That I could not help but liken
To a piler driving pile.

VI.

He's in love with his profession,
In fact, enjoys a "steady pull,"
And oft secures a good impression
(In wax) when patient's mouth is full.
He greatly prides his fine equipments,
And I'm convinced he didn't stop
Until he tested all the workings
Of every tool within his shop.

VII.

I so rejoice 'tis hap'ly over,
I now possess a "Bridge of Sighs,"
Also "Crowns" all bright and golden,
Unlike those worn in Paradise.
I here withdraw my late reflections,
There's nothing that could compensate
Me for these priceless masticators
From my "Dentist Up to Date."

NECROSIS OF THE MAXILLA.

BY E. HOWARD BABCOCK, D.D.S., BROOKLYN, N. Y.

After filling a tooth, the pulp of which has been removed and its place occupied by some appropriate material, depending upon the choice and habits of the operator, it will be found that the chance of aftertrouble is greater if the tooth be in the inferior than in the superior maxilla. At least, this has been the experience of the writer.

It was a long time before any satisfactory reason for [this difference in susceptibility to inflammation could be found, but I now

believe it is due to the difference in density of the maxillæ. The superior maxilla is less compact, and consequently any gas which may develop, through the decomposition of organic material not removed by the operator in sterilizing and filling the root, has room to spread itself through the cancellous portion of the bone and be gradually absorbed without causing much pressure on the surrounding tissues, thus being less of an irritant and less likely to cause any serious inflammation. Following out this same line of reasoning, it will be found that the greater density of the inferior maxilla accounts for its greater liability to inflammation following the operation of root-filling.

The above facts have been impressed upon me by some personal experiences with several cases of necrosis of the maxilla, both superior and inferior.

In the superior maxilla the destructive process is more of a carious than of a necrotic nature—the destruction is more of a general breaking down of the tissue; while in the inferior maxilla the process seems to be more of a true necrosis, the bone dying in masses.

In Heath's book, entitled "Injuries and Diseases of the Jaws," the statement is made that in case of necrosis of the jaws it will be found that the restorative process is much more rapid in the lower than in the upper jaw.

My experience confirms the above statement, and has convinced me that the greater density of the inferior maxilla is a cause for the greater frequency of inflammation and suppuration following root-filling; and also, the irritant being removed, this very density favors the more rapid repair of the osseous tissue.

BALSAMO DEL PLATTO—A SUBSTITUTE FOR BALSAMO DEL DESERTO.

BY S. DAVIS, D.D.S., DENVER, COL.

Since the S. S. White Dental Manufacturing Company has obtained the exclusive right of selling Balsamo del Deserto, and is charging an outrageous price for it, why not use Balsamo del Platto, which is inexpensive and quite as efficient for capping pulps, filling root-canals, etc. In short, it will accomplish anything which Balsamo del Deserto will.

The name originates from the locality in which the material is found, as it is very plentiful along the shores of the Platte River, although it may be found along all the streams rising in the Rocky Mountains. It is abundant in the desert and on the plains, perhaps carried there by the wind or floods many years ago. It is also found in Dead Man's Canon, so could just as well be called *Balsamo del Morto*.

The legs and wings of insects are sometimes incorporated in it, which might lead some to suppose that it is an insect product. I have seen some beautiful specimens in which whole flies and bees were entombed, the same as in amber. They get into it before it is hardened by the atmosphere, and if it will hold a fly you may be sure there is no chance for a microbe to escape.

This pitch will be found on the trunk and around the roots of the balsam fir tree, which grows plentifully in the Rocky Mountains. The pitch spreads out on the gravel or earth and is then washed into the streams and deposited elsewhere.

To prepare *Balsamo del Platto*—Take carbolic acid 1 part, oil of cassia 2 parts, oil of wintergreen 3 parts. Then take the solid balsam, melt by heat, add some vaseline, and then add enough of the above formula to keep the balsam in a thick liquid condition, about the consistency of honey, when cold. It will have an aromatic odor, yellowish color, and will be very adhesive, even sticking to moist surfaces. In root-filling follow with a gutta-percha cone. For lining cavities I prefer to dissolve the balsam in chloroform or alcohol and use as a varnish.

Whatever is used in filling pulp-chambers, success or failure will be in proportion to the thoroughness—first in cleansing, second in filling. In most cases I give the preference to oxychlorid of zinc.

CARE OF THE MOUTH IN RELATION TO PROPHYLAXIS OF THE DIGESTIVE TRACT.

BY G. V. I. BROWN, D.D.S., M.D., C.M., DULUTH, MINN.

A discussion of the subject under consideration necessarily concerns the two principal offices of the oral cavity in the process of alimentation and pathological conditions originating in this region, viz.: Mastication, insalivation, reflex nervous disturbances, micro-organisms.

The proper trituration of articles of food depends upon the perfect occlusion of the morsal surfaces of the teeth, and is aborted by malformation of the jaws, loss of the teeth, or destruction of their crowns from caries or other causes; by artificial dentures and bad habits of mastication.

For prevention of trouble from imperfections of the teeth the physician must naturally have recourse to the services of a dentist, but inquiry into the habits of mastication, with instructions as to their correction, are essentially important, and in this regard no greater assistance can be given than an effort to make the environments during the hours for eating such as will have a quieting mental influence and assist deliberation in all of its processes.

Upon the action of the saliva is dependent digestion of the starches and their conversion into sugar, the process continuing in the stomach after swallowing, and if this action upon the carbohydrates be insufficient, such matter becomes a source of irritation and a media for the ferment-producing bacteria, or, if passed into the intestines in an undigested state, will overtax the digestive action there and cause intestinal disturbances.

Here again mental preoccupation or mental distress must be so far as possible allayed, as upon an active consciousness of the gustatory function is dependent, in a large measure, the flow of the saliva from its glandular sources. Again, also, we find this dependent upon the effect of masticatory effort, as the activity of the parotid is much stimulated by the pressure of the ramus of the inferior maxillary, hence undue haste must necessarily result in the swallowing of a bolus of food improperly mixed with saliva. The wearers of ill-fitting artificial dentures, by reason of the dislodgement suffered in opening the jaws wide, or the dropping down on one side during an effort to crush or masticate upon the opposite side of the mouth, acquire the habit of a sliding movement and do not open and shut the jaws freely. They thus become frequent sufferers from digestive disturbances, hence the erroneous theory (still extant, I believe, among certain homeopaths) concerning the poisonous influence of mercury set free from the vulcanization of the red-rubber plates.

Reflex action from inflammations of tooth-pulps, pericementum and gums, while widespread in its general manifestations upon other parts, has comparatively infrequent direct influence upon the

digestive tract, yet there are well-known ill effects accompanying the irritation of first dentition, not, as frequently assumed, by the inflamed condition of the gums, but by the pressure at the still open end of the root in its imperfect state of development upon the pulp of the tooth, and its nerve connection caused by the tough overlying tissue resisting nature's efforts to push the crown through as growth takes place. In like manner we sometimes find difficulty in the eruption of the third molars (so-called wisdom teeth). The lance can of course largely prevent such disturbances.

The necessity and value of sterilization of the secretions of the mouth, as a prophylactic measure, with reference to diseases of the stomach and intestines, depend upon the nature of the micro-organisms found there, and whether these can withstand the action of the gastric juices long enough to become excitants of pathological conditions, or pass through into the intestines with sufficient vitality to reproduce themselves and there also continue to be breeders of disease.

These points have been most carefully determined by Dr. Miller, of Berlin, and Dr. Fenton B. Turck, of Chicago, to whom I am indebted for valuable literature upon the subject.

Dr. Miller was able, in an uncleanly mouth, to estimate by culture methods 1,140,000,000 cultivable bacteria. He isolated twenty-five different kinds, and of these twelve were again found in the fœces, eight in the stomach. He demonstrated that there were five forms of gas-producing bacteria. As a result of his series of experiments he gives the following conclusions:

1. The microbes which are swallowed at the beginning of a meal do not pass into a stomach filled with gastric juice, but into an empty stomach having a neutral or alkaline reaction when free from hydrochloric acid, which does not appear in detectable quantities until after the lapse of one and one-half hours.

2. The micro-organisms are often imbedded in solid particles of food, thus escaping for a while the action of the juices.

3. Liquid substances do not remain long in the stomach, but soon pass into the duodenum and carry with them the bacteria before any considerable amount of gastric juice has been secreted.

Turck says: "It has been observed that pathogenic micro-organisms may be swallowed and still no infection of the stomach be apparent; but let some errors of diet, the abuse of alcohol, irregu-

larities of living take place, then the mucous membrane forms a fertile soil for the development of the micro-organisms." He calls attention, further, to the fact that the bacillus coli communis developing in the lumen produces no marked change, but when developed on the walls it lowers the vitality of the cells and paves the way for more active pyogenic organisms, or if imprisoned in the tissues it at once becomes a pyogenic organism.

The following case, described by Turck, I quote, as it illustrates the value of an accurate demonstration of existing bacteriological conditions in harmony with correct diagnosis in actual practice, by which the hitherto speculative status of this subject is at once removed.

"Cultures were made from the mouth, in which were found large numbers of bacillus lacticus; germs of putrefaction, as well as fermentation and staphylococci. Pyogensaures were also found in an abscess in the mouth. Cultures were made from the stomach also and the bacillus lacticus was found; groups of thread-form bacilli and staphylococci were also found. It was a severe case of rapid gastric inflammatory process with beginning of atrophy. Disinfection of the mouth and placing the teeth in good order were the first indications in the case. A similar disinfection of the stomach with soap and water, followed by lysol, was instituted. An improvement in the case was manifested at once."

In other cases, cited by the same author, complete cures were effected simply by treating the mouth and showed the same corroborative bacteriological testimony.

Disinfection of the oral secretions must include such operative measures as may be necessary for the removal of exciting causes—filling, treatment, or extraction of carious or diseased teeth and roots, diseased bone; cleansing of pockets and deposits about the necks of teeth. The regulation of the position of the teeth in cases presenting malformations, removal of artificial dentures with, if possible, a metallic base to give an increased healthfulness of the covered mucous membrane, by reason of better conducting properties; if not removal, at least the correction of mal-constructed bridge-work and crowns. All this of course pertains to the dentist's portion, and concerns the physician only in that if done according to his personal direction, as to the intended result, the dentist's services will be usually found to be much more effective, but the use of an anti-

septic mouthwash can do wonders of itself by repeated application and is easily within the province of every practitioner of medicine.

The difficulties encountered in the sterilizing of the buccal secretions are: 1. By reason of dilution with saliva, any drugs sufficiently powerful to destroy germs are rendered almost, if not entirely inert. 2. The short time of exposure during the process of rinsing the mouth is insufficient for those of slow action, especially when particles of solid food are impacted in the teeth. 3. Danger of injurious effects on the tooth structure. 4. Unpleasant tastes are objectionable.

With these essential facts in view, the preparation of a suitable mouthwash prescription becomes a simple matter, and further reference to extensive literature on the subject is unnecessary.

Soap, applied with a brush, is one of the best cleansers, by reason of its alkaline properties dissolving the mucous. In my own practice I have patients hold in their mouths, from two to five minutes, a solution of 1-1000 bichlorid of mercury and hydrogen dioxid, equal parts. This insures some degree of safety to both patient and operator, and upon dismissal give a prescription as follows:

R Listerin
Glycerin, a a, \mathfrak{J} iii
Carbolic acid, \mathfrak{J} ii

M. Sig.: Dilute one-half teaspoonful in one-third glass of water. Hold in the mouth and continue the cleansing process carefully by the watch for at least two minutes. I have found this to be effective, agreeable to most persons, and valuable by reason of its simplicity, for patients can safely vary the strength in using it from time to time, as their condition may seem to require.

During active suppuration it is sometimes necessary to urge the use of such a mouthwash every hour for a few days, but two or three times in twenty-four hours is ordinarily sufficient.

In a paper read before the last meeting of the American Medical Association I stated that I believed a part of all treatment in infectious diseases, febrile disorders, and diseases of the stomach and intestines should be a thorough disinfection of the mouth; that 95 per cent of, if not indeed all patients would have present in the mouth some condition favorable to pathogenic organisms.

My own experience is filled with illustrations of cases, including a variety of gastric and intestinal diseases, relieved and cured by

simple removal of exciting causes and disinfection of the oral cavity. What is true of my own experience is also true of all others who have given the matter active attention.

In conclusion, the question naturally arises; How much consideration of mouth diseases is possible for the general practitioner in the practical application to general practice, without expert knowledge and without being able to get the assistance of a dentist in more than a small proportion of his patients? As an answer I submit the following: In making the usual examination of the tongue, while noting its indications, look about the mouth and note:

1. The general condition, cleanly or otherwise; lesions of the mucous membrane surfaces; teeth missing, or with carious crowns, old roots, bridge-work, gold or other artificial crowns.

2. Examine surfaces of the gums for fistulous openings of alveolar abscesses, or for any sign of discharge from diseased bone.

3. If artificial dentures be worn, notice if firmly in place by making patient open and close the jaws, also the state of uncleanness.

4. See if there be deposits of tartar and other matter about the necks of the teeth; make pressure on the gums to test for discharge of pus.

5. In children's mouths look for the eruption of teeth expected at that age.

6. With symptoms of chronic nasal catarrh, having unilateral appearance, be on guard for trouble with the maxillary sinus and examine carefully the region of the upper jaw, from cuspid to second molar, for indications of a dead root or tooth, or history of one having been extracted which might have been an exciting cause.

7. Do not be deceived, even though the mouth be cleanly in appearance and filled with shining evidence of dentists' handiwork. Examine each tooth in as strong light as possible, compare color with that of its neighbors in the arch, and if one be slightly darker than the rest it may indicate a dead pulp, and if the history of treatment does not account for its color, quite probably the pulp-chamber of such a tooth is filled with putrescent matter from which might be ignited an infection at any favorable opportunity.

8. Percussion with some light metallic instrument will often reveal, by pain or difference in sound, an affected tooth. Thus, by simple methods of observation, nearly all the pathological condi-

tions of the mouth can be readily diagnosed, and the advisability of the disinfection at least determined while engaged in the daily round of visits.

Whenever the internal administration of antiseptics is indicated, is it not reasonable to assume, in view of the testimony, that the beginning of the digestive tract should be cared for?

As a last word, and even at the risk of irrelevancy, I wish particularly to call attention to the consideration of the important bearing of this subject in cases of appendicitis, and, without entering into a discussion of this subject, to suggest that with the powers of resistance impaired in the vicinity of the seat of the inflammation, constant passage of pyogenic organisms must be a dangerous and inviting cause of infection, at least sufficiently so to warrant as rational the effort to prevent their introduction from the mouth. Especially is this true in cases that show a tendency to recur from time to time without operation, and doubtless many an otherwise aseptic operation may have been rendered useless by disregard of this precaution.

How dear to our heart is the cash on subscription,
When the generous subscriber presents it to view;
But the man who don't pay—we refrain from description,
For perhaps, gentle reader, that man may be you.—*Ex.*

RELATION OF TUBERCULOUS GLANDS IN THE NECK TO DENTAL CARIES.—Dr. Starck, from observations upon 113 children, has established a distinct relationship between lymphadenoma and dental caries in 41 per cent of cases. In two cases he succeeded in discovering the presence of the tubercle bacillus in the tissues situated between the roots of a molar in direct contact with diseased glands. He considers it most important in treating these cases to extract all carious teeth, and in every way to place the oral cavity in a perfectly healthy condition.—*Brit. Jour. Dent. Sc.*

TOOTHPICKS prepared by nature are a product of Spain and Mexico. *Ammi visnaga*, an umbelliferous plant, is called the "toothpick bishop-weed" on account of the use made in Spain of the rays or stalks of the main umbel. These, after flowering, shrink and become so hard that they form convenient toothpicks. After they have fulfilled this purpose they are chewed and are supposed to be of service in strengthening the gums. The spines of *Echinocactus visnaga* are in common use among the Mexicans for the same purpose. The number of these spines upon a single plant is something enormous. A comparatively small plant in Kew Gardens was estimated to have 17,600, and a large specimen in the same place could not have fewer than 51,000.—*Brit. Jour. Dent. Sc.*

Digests.

CONGENITAL TEETH. By A. S. Waiss, M.D., New Orleans. On January 11, 1895, I was called to confine Mrs. M—, a multipara. After a somewhat tedious labor twins were born—a boy and a girl. The boy weighed four pounds six ounces, the girl four pounds eight ounces. They were both poorly nourished, the skin falling in loose folds over the whole of the body, of a brown-yellow color, almost simulating jaundice. The fontanelles were large, rachitic to all appearance. But the abnormality that at once impressed the mother and the rest of the family as a most deplorable ill omen was the discovery of an upper incisor tooth in the girl and two lower ones in the boy. The teeth were all loose, being held, as it appeared, only by a depression in the gum, the teeth being free from the alveolar process. The girl lost her tooth in the first twenty-four hours—what became of it no one knew. The boy retained both of his until the second week, when, being greatly in the way of his nursing, I removed them with my fingers. The gums after the extraction did not bleed. Both children died in their fifth month of the same ailment—splenic anemia. Numerous microscopical examinations of the blood were made. The spleens were so enlarged as almost to occupy two-thirds of their respective abdominal cavities. No necropsy was permitted.—*Medical Record*, November, 1896.

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ON THE ADVISABILITY OF INSERTING DENTURES IMMEDIATELY AFTER EXTRACTION IN CERTAIN CASES. By E. P. Collett, L.D.S., Eng. Read before Manchester Odontological Society. The presence of useless teeth and stumps, even apart from the frequent association of abscesses and inflammations of the gum, leads to such a general catarrhal condition of the whole buccal cavity, tongue and pharynx, that relief has to be sought either by remedial treatment or extraction in order to obtain a sanitary condition.

It is sometimes very difficult to decide whether to cut off or extract broken front teeth. Take the case of a girl of eighteen, with perhaps the four upper incisors black and broken, and with

abscesses that would take weeks to cure, even if curable. Perhaps she cannot afford to pay for crowning the roots properly, so nothing remains but to insert a denture.

Next, shall we extract or cut off these teeth? Whenever possible to gain the patient's confidence sufficiently to do what you like with the mouth, I say, and say unhesitatingly, *extract*, and extract at once, for it is quite certain that some day these roots, if left in, will give trouble and have ultimately to come out. I must take this opportunity to protest against the iniquitous and increasing custom, especially amongst the lower-class advertising dentists, of leaving foul roots to discharge pus into the mouth, pollute the breath, and cause endless troubles. How often, after clearing a mouth completely of all stumps and bad teeth, do we not find an immediate improvement in the patient's general health, probably due to the improved sanitary condition.

But to return to the case under discussion; we have decided to extract the four teeth, and then the main problem of this discussion arises. How can we insert the new teeth, for our patient does not wish to be seen by her friends and admirers in the edentulous condition. I answer, take your impression at once, make and try in your plate as soon as possible, whether it be of gold or vulcanite, and plant the new incisors well up the sockets a quarter or even half an inch up under the gum, taking care that the plate goes into the mouth well within twenty-four hours of the extractions, and allow the gum to heal up around the artificial teeth. Tell the patient that the plate is to be worn day and night, and only to be removed for purposes of cleansing; by these means you gain a double object: your patient gets used to the foreign body in her mouth much quicker than she would do if continually taking the plate in and out, and you also prevent any unsightly line of union between the gums and the new artificial teeth. The *shrinkage* also of the gums seems much more gradual and is less in degree, for though the shrinkage of the alveolus may be unaffected, yet the tab of tissue folding over in front of the teeth makes this absorption less apparent; for if the artificial teeth are pressed sufficiently high into the sockets, even after two or three years there is no *space* between the gum and the teeth, though naturally the gum is flatter than formerly. There is another advantage, in that you maintain the exact arch that nature originally assigned to the particular

mouth, and in after years it may be useful, when the other teeth come to be lost, to know the relative position of the incisors in the mouth.

There is another class of cases where this immediate insertion of teeth is most useful, viz.: in those mouths where the incisors are long, rapidly loosening and protruding. How often we have patients with a mouth of this character who come to us for advice; and here again I say extract, and take your impressions at once. In these cases it is better to select teeth that are narrower than the natural ones, and while planted quite half an inch up the sockets, can have their tips inclined much further in than the teeth just extracted, a slight space being left between each tooth. Here the improvement in appearance is very great. When the denture can be inserted the same day as the extraction the results seem best of all, and experience shows that the gums are not so sore as when we wait till the day following, for then the process of healing by granulation has commenced.—*British Journal Dental Science*, November, 1896.

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A LIGHT ARTIFICIAL DENTURE. By W. H. Todd, D.D.S., Columbus, Ohio. Presented at Northern Ohio Dental Society, June, 1896. After you have carved and prepared the plaster model as the mouth would indicate, it should be painted with a thick shellac varnish, and covered, where you want the plate, with Japanese lead (lead foil that comes in chests of tea). Be sure to have the foil burnished on the model, so that every inequality is shown. Now get the articulation as usual. If you wish to try in, take a piece of hard base plate and cut it short of the alveolar ridge, so that when the teeth are set up it can be cut out, leaving the teeth standing. Mount the teeth and try in; if all right cut out the hard base plate as close to the pins of the teeth as possible, replacing the base plate with a plate of Japanese lead, using two or three pieces according to thickness of plate required, smoothing up next to the teeth, also the rim, with wax, just as you want the plate when finished. Then take another piece of Japanese lead and cover the entire palatine portion and rim of plate to the teeth, always burnishing each piece down close. The last piece cover with shellac varnish so that it will adhere to the other part of the flask, then flask up. Warm before separating; take out the middle pieces of foil and wash out with hot water. Use a piece of chamois skin and a little mercury and pro-

ceed to polish the foil in both halves of the flask until it is as bright and smooth as glass, then you are ready to pack, using the toughest rubber you can buy.

When you take the plate out you will have nothing to do but trim the edges and brush on the lathe, the result being the lightest, toughest and thinnest plate made.—*Ohio Dental Journal*, November, 1896.

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IS IT A FACT THAT TEETH DECAY ON THE LEFT SIDE OF THE MOUTH MORE THAN ON THE RIGHT? IF SO, WHY? By F. S. Whitslar, D. D. S., Youngstown, Ohio. Before same society. To answer the question definitely, if more teeth decay on the left side of the mouth than on the right, would require more time and research than an active practice of nearly half a century would afford. Inasmuch as it is a question involving statistics, I ask your careful attention to the following as an approximate answer:

Abstract of the first eight volumes, recording the condition of the teeth of the human crania in the Peabody Museum of Harvard University, tabulated by Drs. Andrews, Knight and Mr. G. W. Newton, anatomist.

ANCIENT PERUVIANS.

SUPERIOR MAXILLÆ.

Number of maxillæ examined	408
Number of decayed teeth observed.....	189
Number of decayed teeth on the right side.....	93
Number of decayed teeth on the left side.....	96
Diminution in number of teeth.....	87
Teeth lost <i>ante mortem</i> on left side.....	522
Teeth lost <i>ante mortem</i> on right side.....	505
Teeth lost <i>post mortem</i>	3343
Cysts the result of alveolar abscesses.....	357

INFERIOR MAXILLÆ.

Number of maxillæ examined.....	110
Number of teeth decayed.....	48
Number of teeth decayed on right side.....	23
Number of teeth decayed on left side.....	25
Teeth lost <i>ante mortem</i>	187
Teeth lost <i>ante mortem</i> , right side.....	91
Teeth lost <i>ante mortem</i> , left side.....	96
Teeth lost <i>post mortem</i>	845
Cysts the result of alveolar abscesses.....	30
Enamel of teeth pitted.....	15

CALIFORNIA INDIANS.

SUPERIOR MAXILLÆ.

Number of maxillæ examined.....	159
Number of decayed teeth observed.....	30
Number of decayed teeth on right side.....	12
Number of decayed teeth on left side.....	18
Teeth lost <i>ante mortem</i>	417
Teeth lost <i>ante mortem</i> on the right side.....	196
Teeth lost <i>ante mortem</i> on the left side.....	221
Teeth lost <i>post mortem</i>	780
Cysts the result of alveolar abscesses.....	154
Enamel of teeth pitted.....	45

INFERIOR MAXILLÆ.

Number of maxillæ examined.....	87
Number of decayed teeth observed.....	31
Number of decayed teeth on the right side.....	15
Number of decayed teeth on the left side.....	16
Teeth lost <i>ante mortem</i>	157
Teeth lost <i>ante mortem</i> on the right side.....	75
Teeth lost <i>ante mortem</i> on the left side.....	82
Teeth lost <i>post mortem</i>	383
Cysts the result of alveolar abscesses.....	64
Enamel of teeth pitted.....	2

NICARAGUANS.

SUPERIOR MAXILLÆ.

Number of superior maxillæ examined.....	9
Teeth lost <i>ante mortem</i>	45
Teeth lost <i>ante mortem</i> on the right side.....	26
Teeth lost <i>ante mortem</i> on the left side.....	19
Teeth lost <i>post mortem</i>	73
Cysts the result of alveolar abscesses.....	2
Enamel pitted.....	1

INFERIOR MAXILLÆ.

Number of inferior maxillæ examined.....	11
Number of teeth decayed on the right side.....	5
Number of teeth decayed on the left side.....	3
Teeth lost <i>ante mortem</i>	28
Teeth lost <i>ante mortem</i> on right side.....	14
Teeth lost <i>ante mortem</i> on left side.....	14
Teeth lost <i>post mortem</i>	99
Cysts the result of alveolar abscesses.....	2

I will not weary you with a detailed statement of the teeth of the Del Fuegan, Mexican, Coahuilan, Guatemalian, and an examination of prehistoric crania by Dr. J. R. Patrick, but will give

the total number of teeth examined and the percentage of teeth diseased.

Total number of teeth examined	8481
Total number of teeth diseased	2493
Total percentage of diseased teeth	29.4
Total number of upper teeth examined	5655
Number of teeth diseased	1866
Percentage of diseased teeth	33.0
Total number of lower teeth examined	2826
Number of teeth diseased	627
Percentage of teeth diseased	22.2
Total number of teeth diseased on right and left side	2493
Number of diseased teeth on right side	1220
Number of diseased teeth on left side	1273
Excess of percentage of the left over the right	4.17

At this point I call your attention to the fact that although but a limited number of crania have been tabulated, you will observe that all the lesions that are present in the oral cavity of our race to-day were present in a great number of those prehistoric crania, from which fact we are led to conclude that decay of the teeth is not born of civilization, but is a child of the ages. Another fact worthy of notice: The superior teeth are liable to decay earlier and more rapidly than the inferior. Taft gives these percentages in 1,000 cases:

Central incisors	2½
Lateral incisors	3⅓
Cuspids	2¼
1st Bicuspids	8⅔
2nd Bicuspids	13⅓
1st Molar	37
2nd Molar	22 2-5
3rd Molar	10⅞

In 10,000 cases Magitot found decay as follows:

Superior	6004
Inferior	3996
Right side	4791
Left side	5209

Pardon a reference to a personal record. Operations made from 1865 to 1875 show that 3½ per cent more operations were made on the left than on the right side of the mouth.

From the foregoing we are led to conclude that decay is more prevalent on the left side, and in upper jaw, with the exception that

the lower first and second molars are more affected by decay than the upper.

Having briefly and perhaps imperfectly answered the first question, I now answer the second, Why do teeth decay on the left side of the mouth more than on the right?

The principal reason why teeth decay on the left side more than on the right is because people eat on the right side. This cleanses the teeth by rubbing off the food which would otherwise ferment and decompose, thereby generating acid which would act on the structure of the teeth and cause decay. All teeth should have exercise. It promotes the circulation of the blood in the gums and peridental membrane and pulp tissue, consequently the organic portions of the teeth have more power to resist the ravages of disease; in other words, vital resiliency is stronger. The shape of the teeth and gums naturally is made for the food to glide over them, but if not used of course the food will stick to them. Carbohydrates and starchy foods are principally concerned in decay.—*Ohio Dental Journal*, November, 1896.

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THE USE OF AMALGAM. By C. Edmond Kells, Jr., D.D.S., New Orleans. Before Southern Dental Association, July, 1896. Amalgam is my main dependence in a large class of cases. The less metal there is in a tooth, the better it is for the tooth. Fill the pulp-chamber with cement, and over that place a veneer of amalgam. In places where amalgam would show and not look well, combine gold and amalgam in the cavity. First fill the portion that will be visible with gutta-percha and complete the filling with amalgam. At the next sitting remove the gutta-percha, leaving a nice little cavity with one wall of amalgam, and fill that with gold. I have been doing this with great satisfaction for a long time. There is something in the combination of gold and amalgam that saves teeth better than all gold or all amalgam. There are cases, however, where you cannot use amalgam with as much ease as you can gold, or in very small cavities. In the front teeth there is no choice; you have to use gold, but you do your patients a kindness not to torture with long sittings for gold fillings in the back teeth. If you take the same pains in the use of amalgam you will get as good results. I wash my amalgam in alcohol, and squeeze it in double china silk.—*Ohio Dental Journal*, November, 1896.

DRY SOCKET. By J. Y. Crawford, M.D., D.D.S., Nashville, Tenn. Before Southern Dental Association, July, 1896. I would like to call your attention to a peculiar condition which I have called *dry socket*, not having any other name for the condition I wish to speak of. After the extraction of a certain tooth the socket remained open and dry for twelve months. In another case the left lower wisdom tooth was removed with great difficulty. There was no bleeding after the extraction, and the patient complained of more or less pain. I suggested that she lie down in the ladies' dressing-room and rest awhile. She sent for a physician, who gave her some stimulant, and she went home, but suffered very much that night. Her physician gave her a strong opiate and advised her to return to me for treatment. Late the next evening she came in. There had been no bleeding from the socket; the jaw was somewhat sore and the wound clean and nice. That night she had severe paroxysms of pain. The 6th year molar was a dead tooth, on which she had worn a crown for seven or eight years; the 12th year molar was in position. She was impressed with the idea that the pain was in the crowned molar, but I examined it thoroughly and was convinced that that was not the case. The socket of the extracted tooth was still open. I washed it out well with warm water and packed it with iodoform gauze. The next day the gauze came out perfectly clean and dry, with absolutely no exudation in the socket. The suffering continued until even the scalp became very sore. The only relief obtained was from the insertion in the socket of cotton dipped in chloroform and then in sweet oil, with a tampon of dry cotton. The patient said she had never experienced such severe pain in the whole side of the face, head and ear.—*Ohio Dental Journal*, November, 1896.

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PORCELAIN FILLINGS. By Elof Forberg, Stockholm, Sweden. I have been using porcelain fillings on a large scale since 1883. The material I use is of three kinds: (1) artificial teeth; (2) cylindrical bars; (3) body and enamel for fusing. Of artificial teeth the English ones, I consider, are the best, as their substance is more homogeneous than that of the American, and they are therefore more suitable for grinding. I use the American (How's) crown only when it is a question of repairing a broken corner of an incisor, where more or less of the cutting-edge has to be replaced, and when,

therefore, with a view to strength, platinum pins are considered requisite. This crown is hollowed out at the back, and therefore very thin, and it is provided with four thin, pliable platinum pins, which can advantageously be used as fastenings for the porcelain filling.

My method of using parts of artificial teeth as fillings has been explained by me at the meeting of the American Dental Society of Europe, at Coblenz, in 1887. It is briefly as follows: Having completely excavated the cavity and finished the edges, I take a piece of colored paper, or somewhat thick tin-foil, and hold this over the tooth surface with one hand, while with the other hand I rub the paper with a polishing-steel, so that the edges of the cavity cut through the paper. In this way I get a mold which perfectly shows the form of the cavity. This mold of paper or tin-foil is then stuck on, with varnish or something similar, to an artificial tooth, the color of which corresponds with that of the tooth to be fitted, when it should be observed that the curvature of the surface of the artificial tooth should be tolerably in accordance with that of the natural tooth; it is preferable, especially in case of a larger defect, to place the mold on that part of the artificial tooth which corresponds with the position of the defect of the natural tooth.

Going by the mold, glued onto the tooth, it will now be easy, by using cutting pliers and corundum or carborundum wheels, to form an inlay that will perfectly fit the cavity, and this can be done in the laboratory, so that all that remains to be done in the operating-room are the finishing touches, which must be from the cavity direct; before doing so the mold should naturally be removed, and the inlay fastened on a metal mandrel with gum-lac or a mixture of wax, rosin and gutta-percha, which mixture is very suitable for sticking on pieces with (as well as for using as temporary fillings). When the piece has been accurately fitted and everything has been made ready for the filling, the piece should be fastened in the cavity with Harvard cement. The cement, which should be well stirred and rather thin, is applied around the edges of the piece, which is then quickly pressed into the cavity, where it should be held with a steady pressure for some minutes to prevent its being displaced by compressed air or otherwise before the cement hardens. Only a thin layer of cement now separates the tooth from the porcelain inlay. The color of the cement should be

a shade darker than that of the tooth. When How's crowns are used the piece should, of course, be fitted so that one or two of the platinum pins may be used as fastenings.

If, then, for instance, repairing a partly broken tooth, it is desired to have, on the palatine or lingual side, a material which, better than cement, can resist wear, the cement on that side may be covered with a thin layer of amalgam, or with gold, or one can, before inserting the piece, add melted glass or porcelain, thus forming the contour of the tooth. This course of action is preferable to making the parts entirely of glass or porcelain, inasmuch as one then gets a harder and stronger piece, and it is also then easier to get precisely the shade of color that is wanted.

The porcelain cylinders are naturally intended for cavities which have or can be given a cylindrical shape; thus, particularly for incisors with enamel defects, etc. The cylinders should be about twenty millimetres long and from one and a half to four millimetres in diameter, or nearly corresponding with the inlay drills that are met with in the market. The porcelain substance ought to be thoroughly burned, so that on breaking or grinding it one gets a firm and bright surface, and should be of such shades of color as are mostly met with. My method of using such porcelain cylinders, for which method I claim priority, is as follows: A cylinder, of suitable color and a little thicker than the drill used, is fixed in a porte-polisher with gum-lac or the gutta-percha mixture previously referred to. When rotating in the machine the cylinder is clasped round with a corundum cloth held by the left hand, and is thus ground (slightly conical) until it can just be pushed into the cavity. The cylinder is then moistened with water or glycerin, is dipped into fine carborundum powder, and, while rotating, is introduced into the cavity, where it will then be perfectly ground in. In doing this the hand-piece must be held very steadily, with only a slight pressure on the cavity to prevent the cylinder from breaking. The corundum powder is then washed away with water, the cavity is dried and the cylinder tried. The end of the cylinder is now ground off somewhat, so that the piece, when placed, rests close against the walls of the cavity. It is better not to use too fine a corundum wheel for this grinding, as the cement will adhere better on a rough surface. If the cavity is not too shallow no other fastenings are required for the piece. The cylinder is then marked

to the depth it enters into the cavity, and it is then cut nearly off at that place with a thin diamond or carborundum wheel. A thin layer of cement or gutta-percha solution is then applied round the sides of the cylinder, which is then inserted into the cavity with a firm pressure, and held there until the cement has partially hardened. With a slight movement of the hand the cylinder is then broken off at the place cut through. Some melted wax or paraffin is then poured on with a spoon-shaped instrument. The piece is not polished until the cement has hardened well. If these cylinder fillings are carefully done and well polished with Arkansas stone, etc., it is quite impossible to distinguish them from the natural tooth when standing a few paces off. The advantage of this method with cylinders instead of common inlays is that the cylinder can safely be fixed in a porte-polisher, and thus ground against a corundum wheel and cloth, as well as in the cavity itself, without the risk of slipping, which, with small inlays, generally is the case, even though they be fixed on metal mandrels. The cylinders can also be used for cavities of an oval or other shape when they are ground in as common inlays and cut off as previously described. Even then one has the advantage of being able to hold the piece fast while working.

The way of using enamel for molding is well known. I only want to mention a few details of my way of procedure. Having pressed the gold-platinum foil well up, thereby using cotton and polishers, I pour some hard wax (consisting of one part of wax and two parts of rosin) into the mold thus obtained. I then pack the wax well, while it is hardening, and also press it over the surface of the tooth. By this means I get a very good cast of the cavity, and also prevent the gold-platinum mold from altering shape while being taken out of the cavity; and, lastly, I can get a plaster-cast model of the tooth, whereby I can better see the shape of it when forming and fusing the porcelain filling. I now mostly use Reiser's enamel, which is melted in an oven. In order to obtain a natural color a somewhat yellow enamel should be used at the bottom, and on top of that the color chosen. I generally also add some continuous-gum body to the first layer. I formerly used a heated instrument for pressing the inlay into the cavity, but it seemed to me as if that rendered the cement less durable. In cases of approximal cavities I generally use a thin linen band for pressing in the piece and removing the superfluous cement.

The question as to what cavities are particularly suitable for porcelain and glass fillings I think I must answer as follows: Fillings of the kinds mentioned are suitable for visible defects in the incisors, cuspids and (possibly) bicuspid. I have used Roustaig's cement as long as it could be had, and afterwards Harvard cement. As regards the question how long a time these fillings will last, it depends upon three factors, viz.: (1) the condition of the cavity, (2) the degree of thinness to which one has succeeded in reducing the cement layer, and (3) the amount of attention the patient gives to his mouth.

The cavities should not be too shallow (especially not cervical cavities, in which it is, as a rule, difficult to get durable fillings). I have several cases where porcelain fillings, in larger cervical cavities of irregular shape, as well as in cavities which cover the whole of the approximal surface and half of the cutting edge of incisors, have lasted ten to twelve years, nothing having been done to them in the meantime excepting refreshing the cement stripe a little once or twice. The most durable is naturally the cylinder filling, because, having rotated and ground itself into the cavity, it fits so perfectly that the cement layer is absolutely as fine as a hair. Here, as elsewhere, hygiene plays an important part. To insert a series of porcelain fillings into cervical cavities on a person who, on account of neglect (or of chronic gingivitis), has the cervical parts of his teeth covered with deposits is, I consider, labor totally thrown away.

The last question, whether porcelain fillings can be considered as a satisfactory substitute for gold, aside from esthetic consideration, has previously been partly answered by the mentioning of porcelain fillings which are now ten to twelve years old, and which, by all appearances, may last as long again. It may generally be said that porcelain fillings can rival gold fillings in durability in cases where they, with a minimum cement layer, touch upon tolerably firm enamel edges, and where, in biting, their surface does not articulate against the opposite teeth.—*International Dental Journal*, November, 1896.

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THE NATURE OF PHYSICAL PAIN. By E. Bergstresser, M.D., D.D.S., Abilene, Kan. Read at the Interstate Dental Meeting, June, 1896. There are two theories extant as to the

exact nature of physical pain. The first theory, which is held by all the old school of psychologists and many of the most eminent modern ones, does not regard pain as a pure and simple sensation like color, sound, smell, taste or touch, but places it in the realm of the feelings. The activities of the mind have, as you are aware, long been defined under the terms of *knowing*, *feeling* and *willing*.

Sensation belongs to the first grand division of mental phenomena. There is nothing more difficult to define than the *feelings*, which constitute the second grand division, and to which pain has been assigned by most psychologists and biologists. Prof. G. T. Ladd, in his large work on psychology, avoids the task of making a definition, and in a negative way states that the feelings may be known by their difference from thoughts, ideas and volitions. The feelings are too primary and fundamental to admit of analysis, but in a general sort of a way the feelings may be defined as a mental stirring or excitement arising through either the body or the mind, and just as the bodily or mental state is beneficial or harmful to the organism, will the feelings aroused be pleasurable or painful. If a probe be plunged into the skin or the pulp of a tooth, the peripheral nerves convey the stimulus to the brain, and there an impression is produced which excites in consciousness a special sensation called touch. The mind, on experiencing this sensation, has a stirring commotion or feeling aroused that is called pain, because this particular form of touch is injurious to the organism. On the other hand, if the soft ruby lips of your wife or sweetheart came in contact with your obicularis oris, the stimulus on being conveyed to your brain produces in consciousness a touch sensation of entirely different quality from that of a nerve-broach, and the kiss, being highly beneficial to the organism, arouses a feeling of pleasure. Pain having a mental origin is of exactly the same nature as that arising from the senses, according to this theory. A mother witnessing the dying struggles of her child has thoughts arising in her mind which bring about feelings of pain similar in nature to those endured in tooth extraction.

All feelings are classed as pleasure or pain. They are also divided by Prof. G. T. Ladd according to the varying source, accompaniment or reference of the feeling. First, we have what are called sensuous feelings, because they accompany the special sensa-

tions of color, sound, smell, taste, touch, heat and cold; second, we have intellectual feelings that accompany the process of ideation; third, are the esthetic feelings which arise with our perceptions and ideas of beauty; fourth, the ethical feelings, which are experienced in our contemplation of right or duty, or their opposites. These details are here given in order to clearly present the traditional theory of physical pain, which is held as strongly as ever to-day. In the opinion of such men as Ward, Wundt, Spencer, Bain and Ladd, the pain from an aching tooth or a burnt cuticle is a sensuous feeling—that is, a feeling that is determined by and attached to one of the special senses, which happens in these cases to be touch and heat. The trained and orderly thinker attempting to follow a loose and disjointed argument, an artist of experience and skill on reviewing a daub of a picture, or a religious enthusiast witnessing the desecration of a holy shrine, all have arising from these various sources the same feeling of pain that comes to the occupants of our dental chairs, but only differing in quality and intensity. In this crude way we have tried to present the classic theory or explanation of pain. It always considers pain the same thing, whether accompanying physical or mental activities.

The second theory of physical pain regards it as specific a sensation as color or touch, with a distinct nervous apparatus to bring it about. This is claimed so far, at least, as the phenomenon of pain is connected with cutaneous surface and its appendages the teeth. In support of this theory it will be first necessary to investigate some physiological experiments and some pathological conditions.

At one time Goldscheider announced his discovery of special pain terminal nerves, but since then he has withdrawn his claim to the existence of any such specialized nerves. Schiff, by cutting the gray matter of the anterior columns of the spinal cord, and leaving the white matter of the posterior columns intact, produced insensibility to pain without loss of touch and temperature sensibility. This would seem to indicate that pain impulses and touch and temperature impulses pass through different tracts in the cord. All who have paid close attention to the analgesic or pain-removing action of chloroform, have noticed in the earlier stages of the narcosis a time—brief in duration, it is true—when there was marked insensibility to pain, but maintenance of touch and temperature. In the local effect of cocain we nearly always have the sense of

touch present while pain is gone. The patient remarks, "I felt you pull the tooth, but it did not hurt." On the other hand, carbolic acid seems to benumb touch without appreciably removing pain. In the disease known as syringo-myelia, which consists in a breaking down of the tissues of the spinal cord and the formation of abnormal cavities in its substance, there occurs insensibility to pain in the legs, heat and cold arouses no response of recognition, but the tactile sensibility is many times normally present. Locomotor ataxia frequently exhibits symptoms where pain, touch, heat and cold sensations were all absent from the legs.

The numerous phenomena of hysterical subjects show evidence in many cases of complete abolition of pain, but all of the other cutaneous senses present.

Dr. Weir Mitchell has recorded a case of a female patient, recovered from hysterical paralysis, who had complete cutaneous insensibility to pain, but who still experienced pain from internal organs. Touch, heat and cold were still sensible to her, but they were not painful. It was only by experience and care that she avoided injuries, and not because they were painful *per se*. Dr. Mitchell also makes notice of the case of a man living in Georgia, and of considerable political prominence, who lived his entire life without evidencing any power to feel pain. All his other sensations were normal. On one occasion he bit off a sore finger simply because of its inconvenience. An ulcerated toe of three years' duration never caused him a moment's pain. An operation for cataract was painless to him. His life was lived without the experience of physical pain.

There are many cases on record, too, where the cutaneous pain sense was present after touch and temperature senses were gone. Schiff divided the posterior columns of the cord, and thus blocked the impulses that awaken sensations of touch. The anterior columns being intact, the pain sense was still present. Mr. C. A. Strong quotes a case of Mosler's of nervous disease, where the brain of a woman was affected: "The right side was insensitive to touch, though pain and temperature sensations remained normal. The prick of a pin caused distinct pain, yet she did not feel the laying on of the entire hand. When a fold of skin was lifted between the fingers and severely pinched, she was aware of what had happened through the pain alone. In a case of locomotor ataxia, also recorded

by Mosler, the prick of a pin caused pain everywhere, yet on the left leg the pressure sense was so dulled that the patient could not tell the difference between 100 and 500 grams, nor even feel their weight on the skin."

These cases and conditions seem to establish a very satisfactory explanation physiologically of physical pain in so far as the skin and teeth are concerned. These evidently are specific parts of the peripheral nervous apparatus that convey separately impulses or excitants that are resultant in sensations of pain, touch and temperature, respectively. These cases cited show that pain may be present without touch or temperature sense. Touch and temperature sense may continue after or while pain is absent. There are authenticated cases not quoted in this paper where pain and temperature sense were present and touch absent. The conclusion is fair, therefore, that pain is a sensation, and that the impulses cause it to travel from the periphery along special tracts, and from special terminals, just as do the impulses exciting the sensations of touch, or heat or cold. We declare for the existence of pain nerves as the most easy and satisfactory explanation of physical pain in all its locations. There seems to be sufficient evidence adduced already to prove this true so far as the skin and teeth are concerned.

The objections to this conclusion filed by the adherents of the "combination theory," which views pain as a mental excitement accompanying certain sensations, is stated by Prof. G. T. Ladd briefly, but unsatisfactorily. "The relative slowness of pain is probably due to the fact that a more diffuse excitation of nervous substance, both peripheral and central, is necessary for the production of pleasure-pains than of comparatively indifferent sensations. The explanation of the apparently different paths of reaching the brain is probably connected with the same fact. While nearly everything which we do know about the conditions of our pleasures and pains is opposed to the view which considers them as specific sensations. Indeed, if the susceptibility of the areas of the skin is different for painful feelings and for sensations of temperature and touch, this may be held as another proof of the heterogeneity of the neural processes which underlie feeling and sensations in general."

Mr. H. R. Marshall, in his book, "Pain, Pleasure and Esthetics," presents the theory that pain is a quality of some cutaneous sensibilities just as intensity is an attribute of color or sound. In order

to explain the facts of partial anesthesia, he avoids the theory of special pain nerves by suggesting that the skin has a fourth sense, which he calls the "cutting-pricking" sense, and that the exaggeration of this sense brings about pain. Therefore, neurotics, whose skins are insensible to pain, while touch and temperature are intact, have been deprived of this "cutting-pricking" sense along with its pain-giving capacity. The pain-giving capacities of the tactile and temperature senses in these cases are still present.

This explanation does not seem tenable in view of the cases cited by Dr. Weir Mitchell, where touch and temperature were felt, but without pain. This sort of thing could not exist if cutaneous pain was due to the "cutting-pricking" sense and its accompaniment of pain.

It has also been objected to considering pain as a state like heat, cold, touch, color, hearing, smell or taste, because these are classed as sensations. All these various sensations are the results of special stimuli in the environment on special nerve terminations. The terminals of the auditory nerve are only acted upon by atmospheric waves, the retina is only affected by vibrations of the hypothetical ether. There is no form of stimulus in the environment to which physical pain can be the special correspondent. Mr. Marshall on this account considers it a mistake to call pain a sensation. To this may be replied that hunger, nausea, thirst and fatigue are classed as sensations, yet there is nothing in the outside world that could be considered as correspondents.

As regards the quality theory, which views pain as an attribute of a sensation, it may be recalled that there are many sensations of extreme pain where it is impossible to distinguish any form of sensibility to which it could be attached. A quality or attribute can never exist so prominently in consciousness as to conceal the thing to which it belongs. The brightness of the sun can not drive from our minds the knowledge of the sun's existence.

In conclusion, we may state that our earlier deductions in this paper are reasonably maintained—namely:

1. Pain is a sensation, and not a feeling. It is true pain does give rise to an emotional feeling of displeasure. There are cases where pain even gives rise to an emotion of satisfaction. We have often heard patients say that it felt good to bite on certain sore teeth.
2. There are special nerve fibres with special terminals on the

periphery, which convey impulses to the central system that produce sensations of pain. In other words, there are pain nerves for the skin and teeth at least, just as there are touch nerves, heat nerves and cold nerves.—*Western Dental Journal*, November, 1896.

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ON REPAIRING BRIDGES AND CROWNS BY A PROCESS OF SOLDERING IN THE MOUTH. By H. Baldwin, M.R.C.S., L.D.S. The question of repairing bridges and crowns, which have had their porcelain facings broken, is one which has called forth a good deal of ingenuity, but can hardly be said in any of the usual methods to have found a satisfactory solution. For some years I have treated all the cases which have presented themselves to me by the process of soldering on the new faces with soft solder in the mouth. I have now repaired over thirty cases of bridges and crowns in this way with satisfaction to myself. The first experiments in this direction were conducted with various kinds of blowpipes, and were all utter failures; but as soon as I got to work with a clockmaker's small soldering "iron," I found the operation easy enough. The soldering "iron" is a small copper "bit," attached at right angles to an iron stem, and fixed to a wooden handle. The copper "bit" as sold in the trade requires a little filing down to reduce its width at the point, and also requires bending to an angle of about 45 deg. to avoid contact with the lip. The bending is effected by fixing one end of the "bit" in a vice and striking the other with a heavy hammer. The iron stem, too, of the clockmaker's tool requires shortening, for greater handiness in use. The kind of solder used varies somewhat with the work in hand. In easy bridge cases a fine quality of ordinary soft solder is the best; in more difficult cases, such as Richmond crowns, a lower melting solder is necessary, and this is to be met with in the trade under the name of "pearl" solder, which contains, in addition to tin and lead, bismuth and mercury, and one variety of which softens in boiling water. A medium grade is the one I generally use, as an increase in readiness to melt implies a decrease in strength. The process consists in soldering a "backed" tooth to the pre-existing "back" in the mouth. It would be naturally supposed that the extra back would cause a very undue projection of the tooth, but this is hardly ever so, because in the majority of cases the teeth have been broken by the bite, and it is necessary to place their successors further out

in order to insure their safety; and, again, it is possible always to choose a rather thin tooth and to "back" it with a rather thin backing. It is important to remember that the closer the surfaces of metal come together the stronger will be the union, and therefore it is absolutely necessary to get the two backs well into apposition over their entire surfaces. Those operators who wish to adopt this method, and are not expert in soft-soldering, are advised to practice it out of the mouth, so that no hitch may occur during the operation, as it is the rapidity of the soldering which prevents the heat from reaching the patient in any important degree.

The method of procedure is as follows: A rather thin porcelain flat tooth is selected and backed with No. 7 gold. The pins are cut short and riveted down into countersunk holes, and then still further attached to the back by melting gold solder over them. The back is then filed down perfectly flat and smooth. The old back remaining in the mouth is also trimmed smooth, all prominences caused by the old pins, etc., being burred down. The new tooth is let down till it takes its proper position in the mouth. The new back is "faced" with an excess of "pearl" solder, by means of the soldering iron, which has itself been previously faced with the same solder. A piece of blotting paper is inserted under the bridge (if bridge it be) and allowed to project each way, to protect the gum and palate from radiant heat from the "iron." A roll of bibulous paper is placed in the labial sulcus and a napkin applied in the usual way.

The old back in the mouth is then faced with the same solder by means of the soldering "iron." Hydrochloric acid and zinc is used as a flux. The new tooth is then placed in position, held there by the finger, a small piece of bibulous paper intervening, and the solder is melted by touching the "iron" to the tips of the two backs where the solder comes to the edges. The "iron" must carry a bead of molten solder in its end. The union is known to be complete when the new tooth is felt to suddenly sink down into its exact position under the pressure of the finger. After each application of heat in the mouth the work is *immediately cooled off* with a cold wet swab of cotton wool. Several other details to observe are the following: If the new tooth is to be next to a contiguous live tooth, see that both the backs, old and new, are just free of it, and place a single thickness of blotting paper between. See that the new back does

not extend so far as to touch the gum. Let the back of the new tooth be as large as possible and its lateral edges not bevelled. See that in facing the backs with pearl solder, the solder be carried well over the cutting edges. See that the "iron" is as hot as possible, always provided it be not overheated and the facing of solder spoiled thereby. Test the heat of the "iron" by seeing that it will instantly melt bits of solder when pressed upon them. The iron must be very hot, so as to do the work quickly, and quickness is the soul of the process. When attaching the tooth do not attempt to conduct the heat through the old back, but apply the "iron" to the cutting edges of the backs, so that it comes into contact with the solder previously put upon them. This is the most important detail of all, as *no amount of heat* will do the work properly *through the old back*. The diagrams show the correct and the incorrect way of applying the soldering "iron."

The melting of the solder between the backs seems to be induced by actual contact of that solder with the molten solder constituting the facing of the "iron." The molten condition is evidently passed on from molecule to molecule, each molecule when falling into the molten state knocking down the one next to it in a way which seems to be analogous to the way in which a row of nine pins may be made to knock each other down, or a row of dominoes set up on end. This explains why the molten solder constituting the facing of the "iron" must be placed against the solder already in the "backs." Mere heat will not suffice.

In this way a complete melting of the solder between the backs is effected, no matter how long the tooth. The length of time required to effect this is about two to four seconds, varying with the size of the tooth.

If the tooth after being soldered on is found to be in an incorrect position, it must be melted off again by again applying the "iron" to the tip of the new back, touching the solder, and pulling it forward with the "iron." The reason for putting an excess of solder on the new back when facing it, is, that when it melts it allows the tooth to sink under the pressure of the finger, and so tells when the melting is properly done, and it also insures there being plenty to fill up all the spaces. The excess is attracted away by the "iron." I have done some cases with teeth backed with dental alloy, but am not sure that the solder attaches quite so well to this

as to gold, but when using gold I find it does not do to use a gold of less thickness than No. 7, as the solder in that case has a bad effect on the gold. In wear, the soft solder does not disintegrate nor suffer in any way, nor does it give rise to an unpleasant taste, but the bite must always be made quite free of the new tooth and of its "back."—*Dental Record, November, 1896.*

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A METHOD OF CURING BY CLEANSING, asepticising and permanently filling putrescent or suppurative pulp-canals at one sitting that *has not shown a failure in three years.* Clinic before New Jersey State Dental Society, 1896, by Dr. L. C. Le Roy, N. Y. Case: Superior central incisor, left side. Some peculiarities developed in diagnosis. Tooth very opaque upon transmission of reflected light; quite badly discolored. Slight soreness peculiar to diseased pulpless teeth. No fistula present. Dr. C—, the patient, gives as previous history that the tooth has been in condition as indicated externally for years. Pulp-canal never entered previously.

After placing on the dam, the operation consisted of opening into pulp-canal. Putrescent odor markedly present, with dark, watery pus. Not the slightest pain until the broach was inserted about one-half the length of tooth, when shock was felt, living pulp encountered. Hemorrhage followed; applications of 50 per cent sulphuric acid for a few moments caused anesthesia and allowed of removal of remaining pulp-tissue. Followed this treatment with a solution of sodium bicarbonate until chemical action ceased.

Pulp-canal then freed of fluid. No real effort at drying, because the moisture left in the canaliculi acts as an auxiliary and permits of more perfect sterilization by the carbolic acid, C. P. (deliquescent crystals), which was used next. This allowed to remain *in situ* until the permanent pulp-canal dressing of eucalypto-percha was prepared, which is done for each such operation by using any of the low heat gutta-perchas with eucalyptus oil (in glass watch-crystal) as a solvent. Tooth then dried thoroughly with bibulous paper canal points, hot-air blast from syringe and pulp-canal dryer.

This *positively* accomplished, the eucalypto-percha dressing in very plastic state was inserted with smooth broaches until the canal was filled; followed this with a few fibers or cotton carried to the apical foramen and compacted; followed this with a gutta-percha canal point, of the proper diameter, to admit of being carried to, and

compressed in, canal beneath cotton which forces the excess of eucalypto-percha from canal into pulp-chamber. That which remains is taken up by the g. p. point immediately, which expands a trifle (the reverse of chloro-percha) and most positively fills the root-canal. Any oil which remained was removed with alcohol and the cavity lined with phosphate.

The doctor's second clinic was: "A method of obtaining plaster-of-paris impressions and occlusions of the teeth simultaneously for crown or bridge cases, producing models with all the parts in perfect condition."

Operation performed for the patient; first noting condition of all parts, paying attention to the teeth on side of mouth opposite to that of which the impression was desired, as those parts must be the guide when teeth are occluded, while the plaster-of-paris is hardening. Required the patient to open and close the teeth several times so that he closed intelligently when finally required.

In this instance a substitute for impression cup—yellow beeswax (sheets)—was used, the impression cup being improvised of the desired shape and size. The doctor cut from a sheet of wax six inches long a three-quarter inch strip and united the edges, making a ring oval in shape divided midway, with a septum of wax, causing it to adhere to the ring with melted wax. This made a double impression cup or plaster receptacle.

The plaster was prepared and the required quantity placed in one side of the wax receptacle and a similar quantity in the opposite side. The whole being placed in the mouth, the patient was requested to close the teeth, biting through the wax until the teeth antagonize as they would in repose; opening the mouth fractured the plaster. The parts were removed and subsequently inserted into the wax cap, pieces secured by melting the wax cup at places to hold together, varnished and placed in articulator, both impression and bite being filled at once.—*Items of Interest, November, 1896.*

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ENAMEL MARGINS. By Fred Schumacher, D. D. S., San Jose, Cal. Read at Santa Clara Valley Dental Association, November 10, 1896. Nothing is more fatal to the longevity of a filling than the failure of enamel edges, and how often do we see beautiful fillings marred by a fracture or failure of the enamel at the margin,

to repair which means to weaken the filling and often necessitates removal of entire filling, rendering the original work of no avail.

First, in regard to the extent of cutting away the enamel, we must consider accessibility to the cavity, appearance and strength, and we may say retention, although I believe we all agree that a filling dependent upon enamel walls for retention is indeed weak filling.

Different rules are to be applied to the different teeth, as we would not follow out the same rules in molars as in incisors. In all cases of approximal decay in molars and bicuspid the enamel edge should be trimmed away so as to have all edges of the filling accessible to the explorer point, and after the teeth have resumed their natural position the point of contact should be upon the body of the filling, and not at the union of enamel and filling. This may seem in some cases like sacrificing appearance for the sake of durability, but I think such a course much more commendable than sacrificing durability for the sake of appearance.

There are many carefully inserted fillings which have failed at the edges which would have held longer if the enamel edges had been trimmed away more generously. The patient probably wanted amalgam used, considering the saving of time and money, but at the same time objected to showing much of the filling on the buccal or labial side. The result is that the buccal wall is generally undermined by decay in the course of time, depending on the quality of enamel and dentine, and so must eventually be cut away to a greater extent than would have been necessary had the enamel been trimmed away more in the first place. So, by all means see that when the operation is completed the explorer point can be passed over all edges, thus insuring a self-cleansing surface.

We cannot always please our patients by allowing them to dictate to us in this regard or in others. Our own judgment should prevail in all cases, and if a patient wishes to dictate let him understand then and there the matter of responsibility.

Where we have very hard dense teeth, of square shape, the approximal surfaces of which are almost flat and fitted together like a row of bricks, we would find it difficult to extend small cavities so as to bring the edges free from contact with the neighboring teeth. In these cases we must necessarily leave the larger part of the cavity hidden. But here we see exemplified one of the rules of an allwise providence, such teeth as just described being, as a rule

of the very hardest structure and in the mouth of a well-organized and healthy patient.

But no matter of what shape the teeth, if they seem to be of loose structure with chalky enamel, the enamel edge should be carried out to where it would be self-cleansing, subject to the action of the lips, tongue and cheek muscles. It is perhaps difficult to describe variously shaped cavities without the aid of charts and diagrams, but as we are considering only general cases it is unnecessary.

One very important phase of the work here presents itself—the disposal of overhanging edges of enamel, cusps, etc. In a large approximal cavity in a molar or bicuspid the temptation is often to leave the cusp intact and depend upon oxyphosphates to strengthen the same. But a large proportion of such cases will present themselves in time with the questionable cusp entirely gone, not so much from recurrence of decay, but on account of the enamel having split at its weakest point. It is safer to use the chisel freely and depend on a liberal groove cut into the grinding surface for retention. By making such retention we can fearlessly trim away all weak enamel and not have to depend upon deep cutting into sensitive dentine.

Of course such a method opens up a field for objection on the part of patients, it being difficult sometimes to explain what seems to them a needless destruction of tooth substance and necessarily more pain. There are still a few patients of that class who think that all that is necessary is to have the hole plugged up without much excavation or preparation. But the true dentist will have in view only the permanency of the filling and the future comfort of his patient.

While the operation is in progress the patient might be pleased to have the work hastened and the filling hurriedly inserted, thereby saving momentary pain; but it must be remembered that any recurrence of trouble afterward will be brought home to the unhappy dentist, should he willingly slight the work in order to get rid of a troublesome patient; for, in doing so, he does the worst possible injury to himself. Therefore, be not led into leaving thin enamel edges standing simply because it means a little time and trouble to cut it away.

In incisor fillings, speaking of approximal decay, the majority of failures are at the palatal edge, especially when this edge has not

been carried down so as to be accessible from the palatal side. Where the cavity is of considerable extent it is safer to use the chisel freely from underneath, so as to have sufficient room to fill partially or wholly from that side, as the case may be. At any rate it is a great advantage to be able to finish the palatal portion of the filling from the palatal side, and where this trouble is taken the result generally repays the effort.

In regard to the treatment of the very edge itself, the rule is to bevel all enamel margins, and I think every careful operator bevels enamel edges to a greater or less extent. In small shot-hole fillings we are often tempted, on account of the ease of the work and its simplicity, to leave the edge as it is left by the bur; but it is in just these easy cases where, confidently working speedily, we shatter the enamel edge at one point or another. By thoroughly beveling the edges of all cavities, large or small, we avoid the common cause of failure in gold fillings, the shattering of the enamel edges with the plugger-points. These few points—that is, keeping the point of contact away from the union of filling and enamel, and the thorough beveling of all edges—constitute, in my opinion, the most important of precautions in cavity preparation.—*Pacific Stom. Gazette, November, 1896.*

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A STUDY OF THE RELATION OF THE FRONTAL SINUS TO THE ANTRUM. By Thomas Fillebrown, M.D., D.M.D., Boston, Mass. Read before American Dental Association, August 5, 1896. My attention was especially called to the relation of the frontal sinus to the antrum some four years ago, by difficulties I met with in inducing a cure in several different cases of empyema of the antrum. In each of these cases the frontal sinus was plainly involved, and seemed to be connected with the cause of the antral trouble. Several of my troublesome cases were sent to me by a specialist in the treatment of the nose and throat, whose skill they had defied for over two years. I will briefly describe five cases.

Case 1.—Male, age thirty-eight, right antrum affected. This patient had suffered from rhinitis for a considerable time, and I think the ethmoidal cells were somewhat affected as well as the right frontal sinus. The patient was radically relieved by operation, and the membrane of the antrum made healthy by treatment, except at the foramen as it entered the meatus of the nose.

Case 2.—Male, age forty-two, a dentist. Offensive discharge from left nostril for nine years. I found left antrum filled with pus, region of left frontal sinus swollen and somewhat red and sore. He suffered from constant headache. My treatment immediately relieved him, and he has been able to keep himself entirely comfortable ever since, and has declined operation on the frontal sinus for a radical cure.

Case 3.—Female, age about thirty. For two years had offensive discharge from left nostril. In this case discomfort almost amounting to pain, and soreness over the left orbit told plainly of inflammation in the frontal sinus.

Case 4.—Female, age thirty-two. Right maxillary and frontal sinuses affected.

Case 5.—Female, age thirty. Right antrum and frontal sinus involved.

These last two cases exhibited about same symptoms as case 3.

Each of these cases I treated by making a good-sized opening through the region of the tooth-sockets, thus affording drainage from the dependent parts of the cavities. In each case teeth had been lost entirely, or only roots remained, as no teeth had to be sacrificed to permit the operations.

Antrum No. 1 was entered through the socket of the second bicuspid; No. 2 through the second molar region; in No. 3 the absence of the first bicuspid afforded opportunity; No. 4 was entered through the sockets of the first molar, and No. 5 through the location of the second molar.

I made the openings as large as a common lead pencil, and made a hard rubber plug attached by a clasp to a neighboring tooth to keep the artificial canal patulous and render the atmospheric condition normal. The plugs could easily be removed by the patient, and, after cleansing, be as readily replaced.

I have tried both the open tube and the solid plug, and much prefer the latter. It is hardly practical to use a canula large enough to syringe through freely and not also to allow the circulation of air, which is not a natural condition. The plug being easily removed, both plug and cavity can be washed thoroughly clean. A tube cannot be made clean without much difficulty.

The results in the cases I have described are as follows: No. 3, cured; has been entirely well for more than a year. No. 5 has

steadily gained and is nearly well. No. 4 improved for a year, then sickened and died from other troubles. No. 2, of nine years' standing, keeps himself comfortable, with steady but slow improvement. No. 1 keeps himself comfortable by a daily syringing of the cavity. In each case, with a probe wound with cotton, I could explore the whole cavity and locate any pus-producing spots, or any collection of secretions; and in cases Nos. 1 and 5, by passing the probe through the foramen into the nose, I constantly found pus, which was either secreted at that point or came down from the sinus above. The last I have since found to be entirely probable, as I shall show later.

I have never found any difficulty in inducing a cure of empyema of the antrum in a few weeks, when the cause was of purely dental origin. This being the fact, and the frontal sinus in these cases being so evidently affected, I was led to conclude that there must be a very much more intimate relation between the two cavities than that described by anatomist or surgeon, for I could find neither an anatomist nor a surgeon who could give me the least encouragement that my surmise was correct.

During the past winter I succeeded in verifying my opinion. Professor Dwight, of the Harvard medical faculty, kindly offered me an opportunity to examine several specimens in the Harvard Anatomical Museum and enabled me to obtain others especially for my purpose, and gave me access to his extensive library.

I believed the infundibulum had some direct connection with the antrum and discharged its secretion directly into it, and an examination of eight different specimens showed that to be the case. The infundibulum, instead of terminating in the middle meatus, continues as a half-tube, this half-tube terminating directly in the foramen of the maxillary sinus. This was the case in all of the eight specimens, and in seven of the specimens there was a fold of mucous membrane which served as a continuation of the unciform process and reached upward, covering the foramen and forming a pocket which effectually prevented any secretion from the frontal sinus getting into meatus until antrum and pocket were full to overflowing.

The pocket I have mentioned has been noticed by a few writers, but has been considered by them as an anomaly. If an anomaly, it is remarkable that I should have found it in seven out of eight specimens obtained at random, where the eighth specimen, in which

it is absent, is plainly abnormal, as the foramen is very large and very irregular.

The continuation of the infundibulum is present in every specimen, and if the pocket is abnormal, my examinations show that it exists often enough to presume it to be present in every case where the frontal sinus is affected in conjunction with the antrum and the discharge from the antrum will not cease.

As I remarked before, few have mentioned the physiological connection of the cavities. Professor Dwight says, in answer to my request: "I have looked the matter up and am convinced that the infundibulum opens most directly into the antrum, and that the common opening of the two into the middle meatus is practically on the inner side of the infundibulum." Tillaux points out "that if fluid be injected into the frontal sinus, instead of running into the middle meatus it passes in great part into the antrum;" and Merkle describes a fold of mucous membrane under the common opening, and accounts by this for the occurrence described by Tillaux. Dr. M. H. Cryer mentions, in his valuable paper read before this association last year, that fluid may enter the antrum from the frontal sinus, but he makes no mention of the intimate connection which I have observed. Prof. Harrison Allen, in a paper published in the *Dental Cosmos*, May, 1895, discusses the proliferation of empyema of the frontal sinus into the antrum, and of the coexistence in these cavities of this condition. Dr. J. H. Bryan, in a paper published in the Transactions of the American Laryngological Association, 1895, mentions the fact of occasional communication between the two sinuses, but considers them anomalies. Further than this, I find no mention of this condition.

I trust the attention of anatomists may be given to this subject, and specimens enough may be examined to determine whether the above-described conditions be an anomaly or one of the normal arrangements, and in what proportion of cases it occurs.—*Dental Cosmos*, November, 1896.

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PHASES OF THE MORTON SYSTEM OF DENTAL CATA-PHORESIS, with special references to new appliances for bleaching of devitalized teeth. Clinic before the New Jersey State Dental Society, 1896, by Dr. Hollingsworth, Santa Barbara, Cal. The subject presented was a young lady having a devitalized and badly

discolored superior right central incisor. On the mesial surface was a large gold filling, which was removed in order to secure the necessary surface of dentine. When this had been done it was found that the root-canal had been previously filled, otherwise root filling would have been in order, to prevent the electric current from following an easier path through the apical opening.

A 25 per cent solution of pyrozone (aqueous) was the agent used. The tooth was completely surrounded by an especially devised rubber nipple, of rubber-dam thickness. Opposite the mouth of nipple a small opening was made, as in the application of rubber-dam. By means of an expanding instrument passed through the neck, slightly beyond the hole made by punch, the nipple was so expanded as to allow applications to the tooth. After being secured by silk ligatures, a small glass tube containing a platinum coil and supplied with a connecting metallic tip was inserted into the neck or projecting end of the nipple.

The metallic or terminal end of the tube presented a tapered opening through which the pyrozone was introduced, and into which was fitted a tapered metal plug, forming the terminal of the wire leading to the electric supply. To facilitate the introduction of the pyrozone into the glass tube, a special device was used. This was two connected rubber bulbs, having a common nozzle, duplex in character; that is, the longer nozzle of the one bulb passed through the other bulb and nozzle in such a manner as to preserve separately the function of each.

The outer bulb was filled with the liquid in the usual manner; the other was then slightly compressed and the common nozzle inserted into the tube opening, which it closely fitted. The compressed bulb was then released, thus causing a collapse of the nipple by the suction produced. While in this condition the bulb containing the pyrozone was compressed sufficiently to fill the nipple and tube, any excess of liquid being drawn into the lower dry bulb by reason of suction. The tooth being now surmounted by the bleaching agent, the syringe or injector was removed and the paper plug forming the terminal of the positive wire connecting with the electrical supply was inserted. The cathode was placed in the hand of the patient.

The electricity was applied with an initial voltage of thirty, current indicated at this time (one and a half milliamperes) proved, according to previous experience, to be somewhat above the aver-

age, indicating a leak. The point of leakage was discovered and, by the application of sandarac varnish, effectually stopped for the time. The voltage was then raised to sixty, the current then remained at one and a quarter milliamperes, about the same as when the voltage was at thirty. Any increase of current above this amount, in the effort to hasten the operation, was objected to by the patient. As a slight leakage was again indicated by the meter, the current was continued for forty-five minutes, instead of thirty minutes, the time usually allowed in average cases. The current was then turned off and the electrodes and appliances removed.

Previous experience by the operator in this method of bleaching has led him to believe that the bleaching action of the agent continues for several hours after the cataphoric action has ceased, which theory was supported by the fact that when the tooth was examined some time later it was noticeably lighter in shade, and so nearly approximated the shade of the adjoining normal teeth as to be practically unobservable.—*Items of Interest, November, 1896.*

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DURAL IN THE LABORATORY. By Dr. Erich Hoerstel. Every operator who constructs large metallic-base dentures has certainly often desired a material which would harden the plaster model, in order that its identity would be better preserved while molding in the sand, and also to insure its perfect continuity during cleaning or subsequent use. At present the soft models do not thoroughly withstand the "fitting process," and in vulcanite work—especially in partial cases—the few plaster teeth are not sufficiently strong to resist the abrading influence of adjusting the denture, and not infrequently break off. In vulcanizing on soft models the vulcanite penetrates the latter, giving an unnecessary roughness on the contact surface of the base-plate, and the slight ridges thus produce undesirable results, irritating the mucous membrane of the mouth. The softness of the model is often the direct cause of porous bases.

I have employed a solution of borax in connection with the plaster mixture, but found it only partially successful. A short time since a preparation came into the market known as "dural," which seems destined to be of service in removing the difficulties in question. It is a crystallized powder which readily dissolves in hot water and becomes a clear liquid. The method of employment is simple: The plaster model is immersed and allowed to remain in the "dural solu-

tion." It requires about ten or fifteen minutes for the model to become completely saturated. Extract the model and permit it to thoroughly dry. By this process the plaster model absorbs about 25 per cent of the liquid dural and is coated with a semi-transparent film which is hard and completely resists ordinary wear. I heartily recommend it to the profession.—Translated by Dr. B. J. Cigrand from *Zahnaerztliche Rundschau*, November, 1896.

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DUPLICATE MODELS.—In order to produce duplicate models—and they are quite necessary and practical in cases of regulation—employ the following composition: Lime, 10 parts; fine sugar, 10 parts, and glycerin, 12 parts. Mix this thoroughly, heat, and press the original model into the compound, and after the latter has become completely hardened, deliver the model. Perfect duplicates can be made in the mold thus obtained.—Translated by Dr. B. J. Cigrand, from *Zahntechnische Reform*, November, 1896.

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THE HERBST DENTAL PRIZE. The following is a letter about Dr. William Herbst, of Bremen, concerning a prize he offers for the solution of a dental problem: It has come to the knowledge of the profession that at the sixty-eighth meeting of the German Naturalists and Scientists, held at Frankfort, our collegian, Dr. Herbst, offered a prize of 1,000 German marks, and deposited same at the banking house of J. Schultze & Wolde, of Bremen, to the person who shall discover a substance or agent which will obtund sensitiveness while excavating dentine, and thus make the labor of the dentist less tedious and render less pain to the patient.

Conditions to contestants are as follows: The agent must not be a secret remedy and must be new—that is, it must be other than any now in use; it must be reliable and take quick effect; it must act immediately and not some few hours subsequent to the application; its action must be limited to the sensitive dentine, and must not under any circumstances attack the dental pulp. In short, the agent or remedy must, in the full sense of the word, be perfectly non-destructive in order that its anesthetic action on the tooth structure be unaccompanied by ill results. The time allowed shall be one year, beginning October 1, 1896, and all practitioners are invited to take part in the contest.

The tests and examinations shall be conducted by the author of the prize and also by the dental departments of the German universities, and at the selection of the latter there shall be chosen three persons who shall determine whether or not the agents fully comply with the foregoing specifications, thus safely insuring the prize to the discoverer.

In the event that the most satisfactory remedy does not fulfil the necessary requisitions, and yet has worth or merit in dental science, it has been decided that one-half of the prize shall be awarded the discoverer, and the balance of the money and its accumulated interest shall be applied for some other purpose in the interest of dental art.

All dental journals and periodicals which are devoted to the advancement of our profession will please acquaint their readers with this announcement; and all who are interested in the problem may for further information apply to Dr. Jessen, Strassburg.—Translated by Dr. B. J. Cigrand, from *Deutsche Monatsschrift*, November, 1896.

THE POPULATION OF THE EARTH.—The quinquennial census of different nations was recently completed. From 1874 to 1895 the total population seems to have increased from 1,391,000,000 to 1,480,000,000. The increase at the rate of 5 per cent should give 1,549,000,000 in 1900 and 2,548,000,000 in the year 2000. The fear expressed in Malthus' essay on population that in course of time one portion of the population will be reduced to famine, seems not incredible, since the producing powers of the soil are limited, while those of reproduction of species are practically without limit.—*Med. Record*.

CONGENITAL INFERIOR INCISORS.—The undersigned was called February 22, 1896, to Mrs. L.— who was in her second confinement and at the eighth month of gestation. Twins were born and on examination one of them was found to have two congenital inferior incisors. The teeth were projecting probably one-sixteenth of an inch above the gums, but were very loose and movable, and could have been removed with the fingers. The children were both small, poorly developed and rachitic in appearance. One tooth disappeared at the tenth week and the child died the twelfth week. This occurred suddenly and away from home. The physician who was called found it in convulsions and considered death due to meningitis. The remaining tooth was removed and given to me. The case was seen at various times by a large number of medical students and physicians, was shown at the April meeting of the Obstetrical Society of Cincinnati, and the tooth was presented to the Cincinnati Academy of Medicine. None of the gentlemen had ever seen a similar case. Margitot, Schurig, Pliny, Bartholin, Ballantyne, Vargas, Buist, Mackenzie, Forchheimer, Jacobi and Pierce have written on the subject.—E. S. McKee, M.D., in *Medical Record*.

Letters.

NEW YORK LETTER.

NEW YORK, December 18, 1896.

To the Editor of the Digest,

MR. EDITOR:—Patent suits are in vogue, Rynear vs. Evans. Suits against millionaires for non-payment of professional services rendered by experts. Something rotten in Denmark when men will combine to prevent their fellows in the same calling from receiving their just dues. This may be fun for the boys but it is death to the frogs. It is marvelous how much of the animal nature there is in mankind. We were impressed by some illustrations in a daily paper recently, which gave some familiar types of faces and the heads of certain fish that occupy the new aquarium in our old Castle Garden. They showed that we are not far removed from the animal, but it seems a pity that some people encourage this side of their natures rather than repress it.

While we may be for a time a little piqued by antagonism, yet it is divine to remember that if we look for it we can find something good in every person. Not long ago a rather pompous man asked us if we meant everything good we said about people. We asked him: "How do you take it when we say good things of you?" We were chagrined at seeing a "nasty" reference to a grand man who has passed off the scene of action. It was published in the proceedings of the recent meeting of the American and should never have been allowed a place in any journal whose editor values a good name. Shakespeare says that he who steals a man's good name steals that which cannot be replaced.

We call the attention of journal readers to Dr. S. G. Perry's article on "Professional Fees." This touches the true inwardness of the subject better than anything we have yet seen. There are some things said which should become general in practice, such as that the rich should pay more than their less fortunate brethren, and that skill should gauge the scale of fees. We agree with the writer that a cash practice is far better. It is better to have at once what is due us than to live in hope of getting it sometime, for the latter, as the late old Dr. John Allen used to say, is very disappointing.

Every time we deviate from a cash payment we regret it, for "it is hard to pay for a worn coat." We wonder if students are taught much along these lines. They should be.

Is Dr. Foster Flagg in any danger? We see he is between two fires (journalistic).

An occurrence recently recalled the Congress at Chicago during the Fair. That visit will always be green in our memory, and we believe that neither the Dental Congress nor the Fair will ever be beaten until another Columbus discovers some place bigger and more energetic than Chicago.

How many of us realize that, according to the rightful record of time, all scholars agree that this month ends the 19th century? It is truly a great event, the anniversary of the Christian era.

The First District Society "raised the wind" this month with ten horse power for blowing the chips out of excavations. Is not the use of so much power carrying things to extremes? But dentists must blow, if nothing but their own inventions.

The Odontological Society has been so well served by the administration of the past year that they have decided to try it for another term. The event of the season occurs in January; Heitzman and Atkinson will be absent, but there is a rare treat in store.

With Christmas greetings and best wishes for the New Year,
Cordially, NEW YORK.

LETTER FROM THE NORTHWEST.

DULUTH, MINN., December 15, 1896.

To the Editor of the Digest,

DEAR DOCTOR:—With impartial brightness the semi-arctic skies in Minnesota are just now reflecting many strange things to the dental observer, who is intent to watch the coming and going and the everchanging kaleidoscopic effects of aurora borealis. Indeed, what more appropriate light could be imagined than this with which to follow the endless changing of positions among our leaders; for we see that the successful politician of yesterday cries out against the wire-pulling of to-day; that those whose voices are loudest in the support of dental legislation in the midsummer meetings spend the hours of midwinter lobbying for their defeat. The once satisfied examiner of expired term fighting tooth and nail his successor and

ardent imitator upon the dental board, finding most bitter fault with the methods he has helped to formulate. The Napoleon who has conquered the foes of an oppressed profession himself an object of suspicion, lest he in turn become the oppressor. Youths in the arms of alma mater nurtured upon the precepts of a code of ethics fitting the high ideal of a true profession, and by example shown a policy of brazen and unblushing advertising, the familiar accompaniment of successful modern college management. That hairs grown gray in the upbuilding of our institutions may pass on to give way to a newer regime without general comment. While, of the loyal legions who claim a kinship to the practitioner of medicine, but a corporal's guard can muster annually to defend their title before the section of Oral Surgery in the association of the medical fraternity of America.

All this and much more the "heavens are telling," but to the northern eye, accustomed to atmospheric vagaries, these things mean nothing of discouragement—merely a paradoxical condition incident to the wonderfully rapid advance of our progress; the ill assortment of the results of individual effort all tending, as we believe, to the ultimate common benefit. We are too near the north pole and the possibility of a peep over to the brighter side, or perhaps to angelic influence, by reason of proximity to the clouds that obscure seraphic faces, to hold any feeling but one of charitable optimism.

Coming nearer to the incidents about us we find the Delta Sigma Deltas have just held a most successful meeting at the State University Dental School, where the advent of another fraternity has made unusual activity, and we know that the redoubtable Weeks was very much in evidence as usual.

Every morning curious and sometimes anxious eyes scan the daily papers to discover if Dr. C. H. Robinson, of Wabasha, or some unknown steed of ebony hue has received the appointment upon the board of examiners.

We also note a general tightening of girths, and other preparations for battle in view of the convening of our law-makers, lest some misguided member be induced to alter the "Act to Regulate the Practice of Dentistry in the State of Minnesota," the pride of every honest dental heart. The Minneapolis Dental Society listened to a most interesting verbal and manual demonstration of the utility and

beauty of porcelain bridge-work by Dr. Kramer at its last meeting; but alas! of the St. Paul Dental Society we hear nothing.

Rumors are afloat of great things that are going to happen among the associated dentists of southern Minnesota at their next meeting, and we believe them true. They're all alive down there.

Word comes from the border land of Dakota, where they divide the duty of looking out for the "fly by night," unlicensed dentists, who flit from state to state, with the arduous task of cultivating the favors of fair applicants for divorce, who seek the Mecca of the mismated, that notwithstanding these diversions much wisdom will be forthcoming at the council of their chieftains this next year.

The advent of letters of invitation to take part in the grand clinic of the Chicago Dental Society has caused a general examination of bank balances, and a burnishing up of fast tarnishing ideas, for the dentist of the northwest has not reached the ultra-scientific stage of subdivision into inner and more fashionable circles of dental association, and is always pleased to acknowledge with gratitude the Chicago Dental Society as the fountain head of much of his valuable information.

Dr. J. H. Martindale, our former collaborer, now devoting himself to nose and throat, has evidenced continued interest by promising to read a paper soon before the Minneapolis Dental Society.

"Watchman, what of the night?" "The morning cometh," is the answer from the hill-tops of Minnesota, and it is believed that the time is ripe for legislation that shall give control to a board of examiners who shall be chosen by reason of their fitness mentally rather than politically. Minnesota is ready to rally to the support of a national board of examiners whose duty shall be to examine nationally. Who are ready to join her?

With the season's greetings of peace and good-will to all,

Truly yours,

G. V. I. BROWN.

SEPTIC SURGERY.—We have left unwashed those things which we ought to have washed, and we have handled those things which we ought not to have handled, and there is no health in us.

THE LATIN PART OF THE BODY.—Medico Lecks—"The deceased was shot between the hyoid bone and the insertion of sterno-cleido-mastoid muscle." District Attorney Rockaway—"Do I understand you to say that wounds in this Latin part of the body are generally fatal?"—*The Journal*.

The Dental Digest.

PUBLISHED THE

TWENTY-EIGHTH DAY OF EVERY MONTH.

Editorial.

CLINIC OF CHICAGO DENTAL SOCIETY.

We would call the earnest attention of our readers to the above meeting, a detailed notice of which will be found on page 734. The clinics and papers will be valuable and interesting, and the Chicago dentists will endeavor to make the visit of all who attend pleasant. If you are not too far distant it will be well worth your while to be present.

CLOSE OF OUR SECOND VOLUME.

This issue will complete the second volume of the DIGEST. When this journal was started it hardly seemed as if there was room for another dental publication, but by inaugurating and adopting an entirely new plan of action, and by making the DIGEST preeminently the journal of, by and for the dentists, it stands to-day with a larger following and more supporters than any other dental journal published.

Without overstepping the bounds of truth, we can safely say that the DIGEST contains more matter of value to the dentist than any other journal, which is one cause of its success. Another and probably the most important reason why the profession appreciate and support the DIGEST is this—the Trust do not advertise in it, nor will they allow any of their members to do so. Consequently, not being under obligation to any unlawful combination, nor the organ of any dental supply house, this journal can criticise and condemn whom or what it pleases. No other dental journal can truthfully say the same.

However, since we derive no profit from advertisements in that quarter, we must look to the dentists for both intellectual and financial support. We have received much help and encouragement from

the profession during the past year, and would bespeak a continuance of the same. Thanking one and all for their assistance, and trusting that more will join the ranks of coworkers in the near future, we close the second volume with best wishes for the new year.

FUTURE WORK OF PROTECTIVE ASSOCIATION.

In the November issue we published in full the decision of the United States Circuit Court of Appeals on the Low bridge patent, which sustained the decision of Judge Wheeler. And in the same issue gave a synopsis of Judge Wheeler's decision, which had previously been published in full.

At the time of the publication of that editorial the mandamus had not been returned to us and the case was not out of court; since then we have been in court, had the mandamus returned, and, with the exception of some minor details regarding court costs, etc., the litigation on the Low bridge patent is at an end in that federal district, with the advantages decidedly in our favor. And while suit can be brought on this patent in other federal districts, we have not heard of any move being made in that direction. However, should the parties interested in the prosecution see fit to bring suits in other federal districts against members of the Protective Association the suits will be taken care of and we have no fear but that the result will be favorable to us.

There are still pending suits that have been brought against members by other patent claimants besides the International Tooth Crown Company, but the prosecution of these cases has not of late been pushed, from which it will be seen that the work of the Protective Association relating to license patents is at a standstill, with our side victorious all around.

The question of whether the Protective Association should be kept in existence has recently been discussed in several dental meetings and the unanimous decision in each case has been that it must be kept alive. The association has been in existence nine years, and from a few weeks after the first circular was issued, announcing its purposes and plans, there has been an almost constant addition to its membership, but nothing like in numbers what its merits deserved. However, great movements are slow to be understood, and we expect to see the day when every reputable practitioner will

not be regarded in the right light until he has joined the Protective Association.

Space will not allow us to give here a history of the work of the association and the good accomplished by it, but let it be remembered that from the beginning the great annoyance the profession had been suffering was done away with, and the money saved can only be approximately estimated. We have placed the amount saved at \$1,000,000 per year. In connection with this estimate it must be remembered that when the association was organized there were no less than five different patent companies seeking to collect royalty from the profession on various patent inventions. Some had one claim, others five, others twenty, and still others had double that number. If a million dollars seems too large a figure take half that amount, which is certainly a low estimate. We believe we are not overstepping the bounds of modesty when we say that the organization has been of great usefulness and benefit to the profession. The future work no one can see, but certainly there will be great work yet for the association, and to make it complete every self-respecting practitioner, who has not already done so, should send in his ten dollars and unite with us. Let any man dispute these propositions successfully if he can.

A history of the work thus far accomplished, a complete statement of the finances and an outline of the future policy will be furnished the members and perhaps the entire profession in the near future. And we shall then demonstrate that it has paid to cooperate and protect each other.

Book Reviews.

PRACTICAL, DENTAL, METALLURGY. A Text and Reference Book for Students and Practitioners of Dentistry, embodying the Principles of Metallurgy and their Application to Dentistry, including an Addendum of Collateral Literature, with Experiments. By Joseph Dupuy Hodgen, D.D.S., Assistant to the Chair of Dental Chemistry and Metallurgy, University of California, College of Dentistry; late editor of *Pacific Coast Dentist*. San Francisco, The Hicks-Judd Company, publishers. 1896.

As stated in the preface, this volume is an outgrowth of the exigencies arising in the class-room and laboratory experience of the author as an instructor in dental metallurgy during the past several years.

This statement is well borne out by the character of the book. It is eminently practical in method and well adapted for use, not only as a laboratory manual, but as a text-book. The principles of dental metallurgy are clearly set forth and illustrated by well-chosen experiments. The experimental method of instruction is interwoven with the whole work, serving not only to illustrate the principles treated, but, in connection with each department of the subject, a series of typical operations is given which, if practically carried out in a metallurgical course, could not fail to be of the utmost value in training the student in this important branch.

The author clearly recognizes what is, perhaps, universal or nearly so—viz., the reluctance with which the majority of dental students take to the study of chemistry and metallurgy. Dr. Hodgson's book is a presentation of a phase of the subject by a method which, if it were more generally pursued, would do much toward overcoming the reluctance alluded to.

The work is not beyond criticism in some of its details, but where such a mass of matter has to be dealt with, this is to be expected in a first edition. As a whole, it is to be commended both for its method and its matter, which are most excellent.—*Cosmos*.

TO REMOVE FISH BONES FROM THE THROAT.—Fish bones can sometimes be expelled from the throat by giving from four to six ounces of milk, and forty minutes later an emetic dose of zinc sulphate. The vomit of coagulated milk carries the bone before it as a rule.—*General Practitioner*.

CONTAMINATION OF LIQUID EYE MEDICINES.—Dr. Clough (*Journal of Medicine and Science*, October, 1896) says: "A fruitful source of contamination of liquid eye medicines is the common rubber-bulb dropper. Many a solution over which much care has been exercised to render it stable soon becomes worthless through these little miscreants. Their mischief lies in the fact that many of them—the white variety in particular—are coated with a flour-like film, which becomes detached the instant any fluid touches it and diffuses itself, in an insoluble state, throughout the contents of the bottle in which it is used. Hence, care should be taken that the pharmacist either dispense droppers free from such objection, or else obviate the difficulty by careful cleaning before inserting into the bottle.

Notices.

CHICAGO ODONTOLOGICAL SOCIETY.

The annual banquet and meeting of the Odontological Society of Chicago was held at the residence of the president, Dr. C. S. Case, 5107 Kimbark avenue, on the evening of November 17, 1896.

The address of the president on the work of the year was generally discussed by all present, and the election of officers for the ensuing year resulted as follows: President, C. N. Johnson; Vice-President, J. G. Reid; Curator, P. J. Kester; Secretary and Treasurer, L. L. Davis; Member of Executive Committee for three years, C. S. Case.

After a delightful evening, the meeting adjourned to meet the third Tuesday in December at a place to be designated by the president.

L. L. DAVIS, Sec'y.

CHICAGO DENTAL SOCIETY CLINIC.

The Chicago Dental Society will celebrate its thirty-third anniversary Monday and Tuesday, February 1 and 2, 1897, by giving a clinic with about twenty-five operators each morning from 9 to 12 a. m. Papers will be read Monday afternoon and evening and Tuesday afternoon, closing the exercises with a dinner at 6:30 p. m. Members of the profession are cordially invited to be present. Headquarters for visitors will be at the Palmer House, where special rates may be obtained.

This will be the first attempt since the World's Fair on the part of Chicago dentists to entertain their friends, and they hope to have a large attendance.

Full programs will be issued about January 15, giving the location of clinic rooms, etc.

Clinic Committee: E. D. Swain, J. W. Wassall, Louis Ottofy, D. M. Cattell, A. W. Harlan, Chairman, 1000 Masonic Temple.

LOUIS OTTOFY, President.

A. H. PECK, Secretary.

PROCEEDINGS OF THE NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

(Continued from November DIGEST, page 681.)

AFTERNOON SESSION, AUGUST 4, 1896.

Vice-President Noble in the chair.

Roll-call of states:

Alabama	T. P. Whitby.....	Selma
	J. A. Hall.....	Collinsville
Colorado	W. E. Griswold	Denver
Connecticut.....	George L. Parmele.....	Hartford

Delaware.....	D. M. Hitch	Laurel
District of Columbia.....	Williams Donnally	Washington
	M. F. Finley.....	"
	H. B. Noble.....	"
Georgia	A. G. Bouton	Savannah
Iowa	J. T. Abbott	Manchester
Kansas	A. W. Davis.....	Holton
Maryland	A. C. McCurdy	Baltimore
Massachusetts.....	J. Searle Hurlbut.....	Springfield
Nebraska	George S. Nason.....	Omaha
New Jersey	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker.....	Newark
Ohio	F. H. Lyder.....	Akron
Pennsylvania	J. C. Greene.....	West Chester
Wisconsin.....	Charles C. Chittenden.....	Madison

Minutes read and approved.

Secretary read a letter from the Pittsburgh Dental College asking for recognition. Referred to Committee on Colleges.

Motion by Dr. Brown:

Resolved, That hereafter all boards, members of this association, accept the list of reputable colleges of the National Association of Dental Examiners as the official list of their respective states; and, further, that this association views with approval the efforts of the different state boards in their willingness to carry out the recommendation made by this association on March 31, 1885, whereby a diploma from a reputable dental college was to be considered the only evidence of qualification to state examination; and we urge the states having laws in conflict with this recommendation to renewed efforts for their amendment.

Carried.

Secretary read a letter from the Omaha Dental College asking for recognition. Referred to Committee on Colleges.

Secretary read a letter from the Dental Department of the Cleveland (Ohio) University of Medicine and Surgery asking for recognition. Referred to Committee on Colleges.

Secretary read a letter from the Dental Department of Howard University, Washington, D. C., asking for recognition. Referred to Committee on Colleges.

Dr. Bouton, of Georgia, presented a resolution:

Resolved, by the National Association of Dental Examiners, That no State Board of Dental Examiners will be recognized by this association whose

members are connected with a dental school as professors, clinicians, lecturers, demonstrators or in any other way whatsoever, or who shall deliver lectures or give clinics by invitation in any dental college.

Referred to the Committee on Codifying the Rules, Dr. Faught, chairman.

Committee on Colleges commenced the second portion of their report; the first part was the report of the charges of the Kansas City Dental College against the Western Dental College of Kansas City.

Moved by Dr. Brown the association go into executive session as a committee of the whole and the Vice-President preside. Passed.

Dr. Davis, of Holton, Kan., spoke on the subject and said both colleges were doing good work. The trouble was brought about by outside people and from students' talk of how easy they can get through the college.

Dr. Abbott spoke of examining the two schools in 1895 and was well pleased with both and thought they were well equipped for good work.

The Deans of both colleges were present and at stated times defended their respective colleges.

Resolution by Dr. Parmele, passed by the committee of the whole:

"It is the opinion of this association that, according to the evidence submitted, the Kansas City Dental College did right in rejecting applicants, etc.

"And on the other side the evidence submitted by the Western Dental College shows that the candidates passed their examinations creditably.

"This association, however, considers neither examination sufficiently rigid to constitute a proper preliminary examination."

Adjourned from the committee of the whole and the Vice-President left the chair, the President taking his place.

Resolution offered by Dr. Parmele:

Resolved, That this association recommend the clause exempting dentists from the application of the Medical Practice Act of Congress for the District of Columbia as an appropriate and indisputable definition of the field and scope of dental practice, allowing progressive expansion of the dentist's function co-incidentally with the advance of dental education, and, as such, suitable as an exempting clause of State Medical Practice laws, and also, as a definition of dentistry in dental laws for the guidance of legal tribunals. The clause reads "That nothing in this act shall be construed to interfere with the graduates of standard dental colleges in the exercise of their profes-

sion to the extent and within the limits of the curriculum of such standard dental colleges."

Resolution passed.

Secretary read a letter from the Dental Department of the Milwaukee Medical College, for recognition. Referred to Committee on Colleges.

Secretary read a letter from the Dental Department of the Tennessee Medical College, Knoxville, Tenn., for recognition. Referred to Committee on Colleges.

The resolution by the association to the dental faculties, relating to the abolition of beneficiary scholarships, was passed by that body, and the letter is as follows:

Saratoga Springs, August 4, 1896.

To the National Association of Dental Examiners,

Gentlemen:—The resolution referred by your body to the National Association of Dental Faculties, relating to the abolition of the practice, on the part of dental colleges, of matriculating so-called "beneficiary" students, was adopted.

Yours very truly,

LOUIS OTTOFY, Sec'y.

Adjourned until 9:30 a. m., Wednesday, August 5, 1896.

SESSION OF WEDNESDAY, AUGUST 5—9:30 A. M.

President Abbott in the chair.

Roll of states called.

Alabama.....	J. A. Hall.....	Collinsville
	T. P. Whitby.....	Selma
District of Columbia.....	Williams Donnally.....	Washington
	M. F. Finley.....	"
Iowa.....	J. T. Abbott.....	Manchester
Maryland.....	A. C. McCurdy.....	Baltimore
Massachusetts.....	J. Searle Hurlbut.....	Springfield
New Jersey.....	F. C. Barlow.....	Jersey City
	G. Carleton Brown.....	Elizabeth
	George E. Adams.....	South Orange
	Charles A. Meeker.....	Newark
Pennsylvania.....	J. C. Greene.....	West Chester
Virginia.....	J. Hall Moore.....	Richmond
Wisconsin.....	Charles C. Chittenden.....	Madison

Minutes of last session read and approved.

Committee on Codifying the Rules, Drs. Faught, Donnally and Parmele, reported.

RULES AND CONDITIONS FOR OBTAINING AND MAINTAINING RECOGNITION
OF DENTAL COLLEGES BY THE NATIONAL ASSOCIATION
OF DENTAL EXAMINERS.

1. A formal application for recognition shall be made by January 1, 1897, by each college now organized desiring such recognition; and colleges hereafter organized shall make such application within the three months next succeeding their organization. All such applications shall be made upon blanks to be obtained from the Committee on Colleges of this association, and shall answer in full all the questions contained in the same.

2. The preliminary requirements prescribed by the National Assembly of Dental Faculties must be accepted and carried out in good faith by the colleges recognized by the National Association of Dental Examiners, provided that the standard adopted by the National Association of Dental Faculties at Saratoga in 1896 is not lowered. Where such *certificate* as thus required cannot be presented from state school authorities by the applicant for matriculation, his or her qualifications shall be tested by an examination, conducted according to this standard, by prominent local educators, approved by a State Board of Dental Examiners for that purpose; none of the persons thus conducting the preliminary examination shall be members of the faculty of the college to which the application has been made.

3. The statements set forth in the application of any college for recognition shall be verified, after investigation, by the Board of Dental Examiners of the state in which the college is located, or by other persons designated by the National Association of Dental Examiners in case no such state board exists; and the recommendation of such board shall be essential to recognition.

4. The state boards in connection with this association are hereby required to become informed of the character of the dental colleges located in their respective states as to their equipment, facilities and methods of teaching, and shall report annually to this association wherein they fail to comply with these requirements; and any college which hinders or obstructs a proper investigation by the person or persons making such authorized investigation as may be necessary to carry out this rule shall, when reported to this association, be suspended from the list of recognized colleges until such hindrance or obstruction has been removed.

5. Attendance of students upon three full courses, of not less than six months duration each, in separate years, with three months' practical instruction intervening between the courses, shall be required before final examination for graduation, and candidates presenting for such examination shall be 21 years of age or more by October next succeeding this examination.

6. Each dental college to be on the list of recognized colleges must have a teaching faculty composed of at least eight individuals as follows, to-wit: at least three professors of dental subjects, covering the four branches of Operative Dentistry, Dental Prosthetics, Dental Pathology and Oral Surgery. For the six subjects in common with general medicine there must be at least five professors, covering the six branches of Anatomy, Physiology, Chemistry,

General Pathology (fundamentals), Materia Medica and Therapeutics and General Surgery. Their students must also be taught the subjects of Chemistry and Bacteriology in laboratories adapted to the purpose and under suitable instructors. That such special college must possess, in addition to suitable lecture-rooms, a well-appointed dental infirmary and a general prosthetic laboratory; also each college must be provided with facilities suitable for manual training in operative dentistry, and must furnish in this way systematic instruction to its students.

7. Final action shall not be taken on the application of any college until such college has been admitted to membership in the National Association of Dental Faculties.

8. No college shall be placed or continued on the list of recognized colleges which has connected with it, in any capacity whatever, a member of a State Board of Dental Examiners.

9. No college shall be in the list of recognized colleges which does not state, in its Annual Announcement, that it complies with the rules and conditions of the National Association of Dental Examiners.

10. These rules and conditions shall apply to all colleges, including those now on the recognized list as well as to those making application for such recognition.

WILLIAMS DONNALLY,
GEORGE L. PARMELE,
L. ASHLEY FAUGHT, Chairman.

Dr. Whitby moved the adoption of the same. Passed.

Drs. Meeker, Barlow and Adams spoke of having sent in their resignations as clinical instructors of the Baltimore College.

Dr. J. Hall Moore said he would resign from the same college and would request the dean to notice, in foot-mark, the reason of the resignations.

Dr. Donnally said he would resign from his position on the Washington (D. C.) College.

Dr. Waters asked for information as regards honorary members of the association holding positions in colleges.

President decided, not being a member of any state board, the resolution did not apply.

Special Committee on Report of President's Address referred to Committee on Colleges.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee would report that the address of the President has been considered and the several suggestions have been referred to committees.

The principal subject mentioned is in regard to incompetent dental schools, and a suggestion is made that a committee be appointed to confer with a committee of the association of faculties.

We would recommend that this matter be referred to the Committee on Colleges. Respectfully submitted.

GEORGE EMERY ADAMS, } Committee.
GEORGE L. PARMER, }

Committee on Conference with the Association of Faculties said they were willing to consult at any period.

Secretary was ordered to notify the Faculties' Association.

Resolution offered by Dr. Barlow that the Committee on Colleges, in the new rules, send notice of the requirements to all the recognized and unrecognized colleges. Passed.

The State Board of California, through the Secretary, sent a notice just after the adjournment of the sessions at Asbury Park, in 1895—a letter of resignation from the association.

Dr. Donnally moved that the Secretary write to the California board if they would not withdraw the resignation. Passed.

Dr. Donna'ly offered the following resolution, which was passed:

Resolved, That this association take cognizance of the laborious efforts of Drs. Faught and Brown to do the work of the Committee on Colleges under great difficulties and embarrassments, and further that we tender these gentlemen a special vote of thanks.

The Treasurer offered a motion to remunerate "Servant No. 2" in the hotel to the amount of \$3 for services rendered.

The Committee on Colleges was ordered to continue its work for 1896-7.

Motion by Dr. J. Hall Moore to meet at the same place as the American Dental Association, the Friday prior to the meeting of the same (July 30, 10 a. m.). Carried.

No further business, the association adjourned, after thanks to the various officers.

CHARLES A. MEEKER,
Secretary.

CALIFORNIA BOARD OF DENTAL EXAMINERS.

At a meeting held December 1 Dr. F. W. Bliss, of Santa Cruz, was elected President, and Dr. W. A. Moore, of Benicia, Secretary, of the California State Board of Dental Examiners.

W. A. MOORE, Sec'y.

MUCOUS MEMBRANES can be made anesthetic by oil of cinnamon (1 to 500).
—*Therapeutic Gazette*.

News Summary.

MR. STEPHEN HEXTER, the genial Chicago agent for *Borolyptol*, has recently been married.

CREMATION IN ENGLAND.—The third crematory in England is now being built in Liverpool.—*Med. Record*.

TIME REQUIRED FOR DIGESTION.—The approximate time required by the human stomach for a mixed meal of bread, fruit and vegetables is three and a half hours.—*Medical Age*.

THE DIRTY SPONGE.—Professor Lang, of Vienna, declares that sponges, owing to the impossibility of destroying germs in them, have long since been banished from the surgeon's table, and should also be excluded from the bathroom and washstand.

STREET NOISES INJURIOUS TO HEALTH.—It is stated on the authority of prominent physicians that nervous disorders in New York City are on the increase. Unnecessary street noises are believed to be responsible in a great measure for this condition.—*Jour. Am. Med. Ass'n*.

THERE is no profession, I believe, which is paid less for the enormous amount of energy, physical, psychical and moral forces that are spent every day in our labor than dentistry, and if there is any profession that should not be practiced for God's sake, it is dentistry.—Dr. Hofheinz, in *Dental Cosmos*.

EYE STRAIN.—The long continuance of eye troubles may be the unsuspected source of insomnia, vertigo, nausea and general failure of health. In many cases the eye trouble becomes suddenly mischievous, owing to some failure of the general health, or to increased sensitiveness of the brain from moral or mental causes.—*The Medical Times and Hospital Gazette*.

TREATMENT OF WARTS.—Simple cutting off or severe cauterization of warts never prevents their return, but the trouble may be readily relieved by internal medication in most instances. Good results have been obtained by taking ten drops of tincture iodine thrice daily, but as a rule the best effects accrue from Fowler's solution, two drops thrice daily (in children, half a drop thrice daily), slightly increasing the dose each week. The warts crumble to pieces and disappear, especially when washing and drying the hands, so that the skin looks normal after two or three weeks.—*Medical Herald*.

THE PHYSIOLOGY OF NERVE.—Dr. Augustus Waller, F.R.S., pointed out that hitherto in investigating the results of stimuli applied to a nerve the answer was an indirect one transmitted through muscle or some other tissue. It had seemed to him better to put the question "How do you do?" directly to the nerve itself and get a direct answer. For this purpose the nerve connected with electrodes is placed in a glass gas-chamber, and the results of a succession of stimuli at minute intervals can be shown graphically as normal replies. On introducing certain vapors, as chloroform or ether, into the chamber the effect upon the nerve is easily seen, and the same holds good when the nerve

is bathed, say for one minute, in a solution of different salts. A series of lantern-slides demonstrated very well some of the results Dr. Waller has obtained with such tests. Thus it appeared that whilst ether only anesthetised the nerve and normal responses were afterwards resumed, in the case of chloroform the nerve was killed.—*Brit. Jour. Dent. Sc.*

STRONGLY PUT.—If you were to take an eminently practical boy and school him in the superficial, sentimental, emotional and dependent habits of the average girl, with the ordinary attendants of a corset, tight and high-heeled shoes, indoor training and insufficient clothing, and let him live on deoxygenated air, with no other hope except to get married, and not allow him to purchase even as much as a railroad ticket for himself, never have a pocket in his clothes, spend hours daily curling his hair and preparing to spend a frivolous evening, he would develop into a veritable hysterical nonentity, capable of producing only his kind.—**LUCINDA H. CARR**, in *Americal Journal of Surgery and Gynecology*.

FORTUNE IN A DEER'S TOOTH.—The old tale of "Eyes and No Eyes" told in the "Sandford and Merton" of a past generation, conveys a useful lesson. We all know how the two little boys went a walk together, and upon their return one had seen nothing worthy of remark, while the other was brimful of the most instructive observations and experiences couched in faultless diction. Whether "Professor" Dixon, a taxidermist of Kansas City, had perused this tale we do not know, but he certainly acted up to the moral conveyed by it. It seems that the Earl of Tankerville, while hunting in the wild west, shot a deer whose head he sent on to Dixon to be mounted. While the latter was preparing the head he noticed a yellow incrustation on the teeth which proved to be gold dust. He found out where the stag was shot, and examined the "licks" frequented by the deer in the neighborhood, and now we suppose he will become—as is generally the case in those journalistic stories—rich beyond the dreams of avarice.—*Brit. Jour. Dent. Sc.*

NON-ACTINIC RAYS AND SMALL-POX.—Not a few scoffs have been levelled at old John de Gaddesden, a physician of the fourteenth century, for his words concerning small-pox. "If you have small-pox," wrote he, "wrap yourself in scarlet cloth, and let your bed-hangings also be scarlet. This is an excellent cure. It was in this manner that I treated the son of the noble King of England, and I cured him without leaving any marks." It so happens that modern science has just vindicated the empirical wisdom of its professional ancestor. Dr. Finsen, of Copenhagen, has shown that it is the so-called chemical rays of the sun, and not the heat rays, which produce irritation of the skin, and that these rays can be intercepted by red glass, or by any other red medium. Experimenting from this basis, Dr. Finsen found, even as did Dr. de Gaddesden, that small-pox patients treated in rooms with red glass windows almost invariably recovered without pitting or marking.—*Medical Times*.

FOR SALE—Good practice, centrally located in one of the largest cities in the Mississippi Valley, at invoice price of residence and office furniture; no bonus; only those with \$1,000 cash need apply. Address **FAILING HEALTH**, care **DENTAL DIGEST**.

Obituary.

IN MEMORIAM.

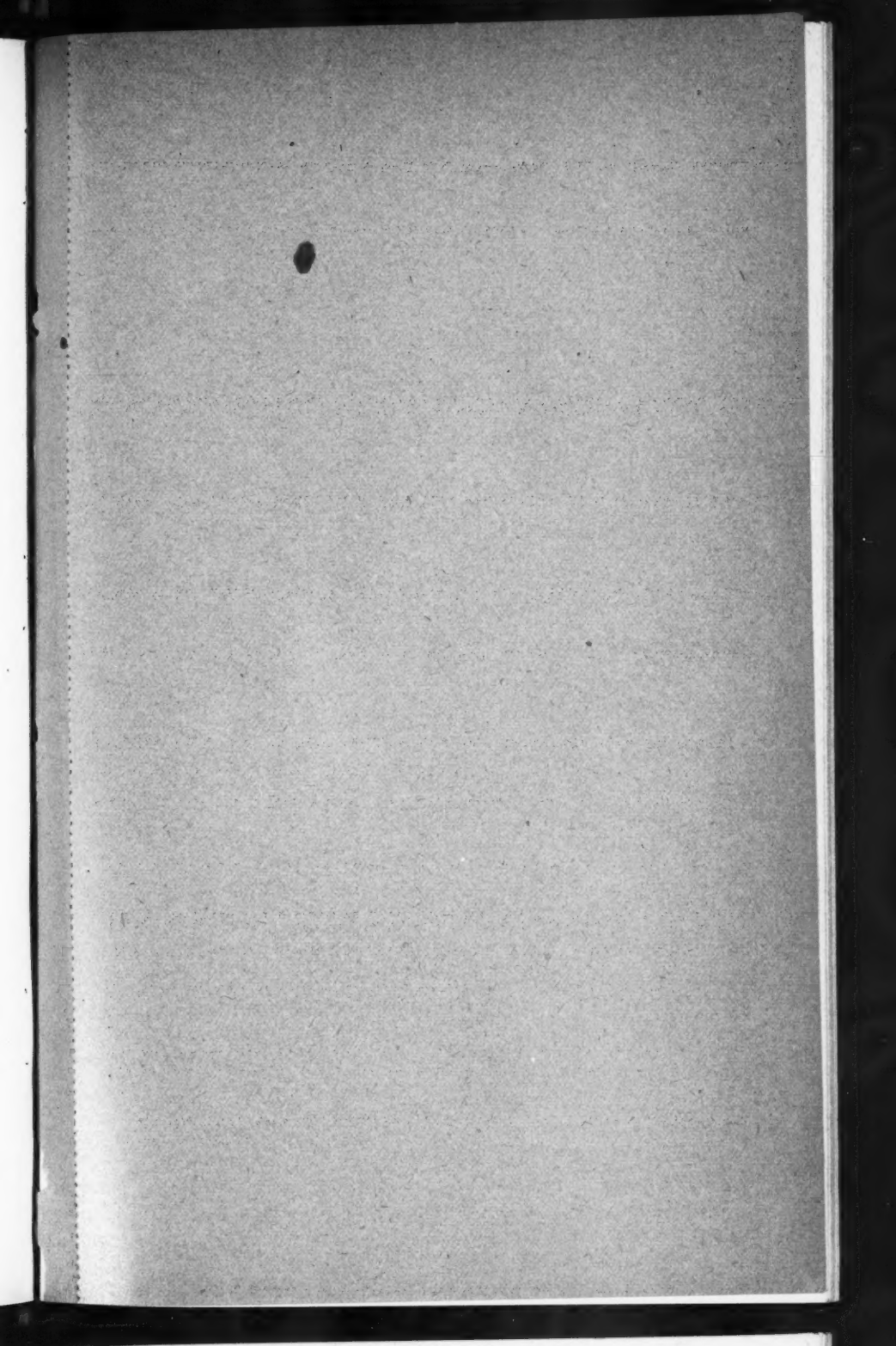
The death of Dr. Carl Heitzman, from hypertrophy of the heart, will cause a surprise to many. The painful intelligence was cabled December 6 from Rome, Italy. He had been conscious of his disorder for some months



DR. CARL HEITZMAN.

and left New York in the early summer, believing that he had not long to live.

Dr. Heitzman was born October 2, 1836, in Hungary, and graduated from the University of Vienna in 1859. With Prof. Carl Wedl he produced in 1869 the great works, the Pathology of the Teeth and the Atlas of the Pathology of the Teeth. In 1873 Heitzman published his first discoveries on the structure of protoplasm and its reaction in the process of inflammation. He also wrote a very valuable work, the Descriptive and Topographical Anatomy,



which is still the leading text-book in all German colleges. He left Vienna in 1874 and arrived in New York City October 15 of that year. He opened a histological laboratory and Dr. Bodecker was the first dentist that entered it, July 6, 1877, followed by Atkinson, Abbott, ourself and others a few days later.

In 1878 fourteen dentists presented him with a fine microscope. The book, "Microscopical Morphology," was published in 1883. He has left a nearly completed work which will soon be published.

We have believed that we could put a few thoughts before our profession that would fitly express the conceded value of the late Dr. Heitzman's teachings. In the days to come a clearer view than it is possible now to get will be clearly shown by comparison of our knowledge before and after of microscopical teachings relating to the minute anatomy of the human tooth. To no man are we indirectly more indebted for the successful accomplishment of that which has afforded an opportunity to so many to become familiar at least with the variety of fields of study of the teeth than to our beloved Atkinson. Now we are no longer dependent upon outside talent; we are able to-day to cope successfully with the most noted scientists of the world. We personally were in the first class which was the result of the indomitable enthusiasm of Atkinson. When he had been introduced to the possible developments of Heitzman's laboratory by Dr. Bodecker, and had talked with Dr. Heitzman, his joy knew no bounds. We saw him then, like all true seekers after knowledge, sit at the feet of the master as humbly as a novice, although he was no novice in science, for he had a prevision of much that was to be revealed.

This cordial reception of Heitzman by such a thinker quickly produced a warm cordiality and mutual respect between them. From the start success was stamped upon these humble beginnings by dentists in the deeper things of science, and these men did more than we can yet appreciate to elevate our calling in the eyes of the older branches of science. It was not accorded to many to witness the last exhibition of Atkinson's devotion to Heitzman, which occurred at a meeting of the Odontological Society a few days previous to the former's demise, but if in nothing else, in that tribute Heitzman had ample reward.

As regards the published works of Dr. Heitzman, they are his monument to be tried by the tests of knowledge, and what is of truth will stand far more enduring than anything material. He had a grandeur of mental capacity that drew one marvelously into his atmosphere. Our two and a quarter years' tuition in his laboratory were among the most enjoyable of our professional life. While we recognized the persistent Ego in our teacher and often rebelled under its sway, yet we somehow felt that it was worth while to submit to his all-powerful rule for the truth's sake. Dr. Heitzman's egotism and abrupt manner made him not a few enemies and lost him students, but many saw in him something larger and grander than his faults. We say this from conviction and out of gratitude for his benefits to us. While his critics have shown a somewhat italicized spirit, yet the day will surely come when the X-rays of the future will throw upon the screen of truthful history the accord of merit which he so richly deserves.

G. ALDEN MILLS.

PREScribe
LISTERINE

FOR PATIENTS WEARING
BRIDGE WORK OR DENTURES.

AND AS A GENERAL

Antiseptic and Prophylactic Wash

FOR THE MOUTH AND TEETH.

LISTERINE Is kept in stock by leading dealers in drugs everywhere, but in consequence of the prevalence of the SUBSTITUTION EVIL we earnestly request DENTAL PRACTITIONERS to

PREScribe LISTERINE IN THE ORIGINAL PACKAGE.

LISTERINE is invaluable for the care and preservation of the teeth. It promptly destroys all odors emanating from diseased gums and teeth, and imparts to the mucous surfaces a sense of cleanliness and purification; used after eating acid fruit, etc., it restores the alkaline condition of the mouth necessary for the welfare of the teeth, and employed systematically it will retard decay and tend to keep the teeth and gums in a healthy state. LISTERINE is valuable for the purification of artificial dentures and for the treatment of all soreness of the oral cavity resulting from their use. Patients wearing bridge work should constantly employ a LISTERINE wash of agreeable strength.

LISTERINE is used in various degrees of dilution; one to two ounces of LISTERINE to a pint of water will be found sufficiently powerful for the general care of the deciduous teeth of children, whilst a solution composed of one part LISTERINE and three parts water will be found of agreeable and thoroughly efficient strength for employment upon the brush and as a daily wash for free use in the oral cavity, in the care and preservation of the permanent teeth.

LITERATURE DESCRIPTIVE OF LISTERINE MAY BE HAD UPON
APPLICATION TO THE MANUFACTURERS,

LAMBERT PHARMACAL COMPANY,
ST. LOUIS, MO.

TO THE PUBLISHERS OF

The Dental Digest.

2231 PRAIRIE AVENUE, CHICAGO, ILL.

Please forward the DENTAL DIGEST to me monthly for the year 1897, for which find enclosed \$2.00.

Name.....

Street No.....

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Yearly Subscription \$2.00 (payable in advance) in United States, Canada and Mexico.

Great Britain, Germany and France, \$3.00 per annum.

Fill out this page carefully, detach it, enclose your subscription money, and forward same to above address.

Mouth Mirrors



MIRRORS
Plain or magnifying, in 4 sizes.
Price **75c** each.

OVAL MIRROR
\$2.25
Mag.

PRICES:

EXAMINATION GLASS
\$1.50

EXTRA LARGE MIRROR
Plain, **\$1.50**
Mag. **\$2.00**

Hypodermic Syringe.



Price...\$2.00

Fitted with solid thumbpiece and finger arms—strong glass barrel and efficient packing.

Supplied with seamless steel tube reinforced needles.

Securely packed in morocco case lined with leather.

Illustration 2-3 Actual Size.

Hypodermic Syringe Filler

(Patent Pending.)

Price 25c by Mail.

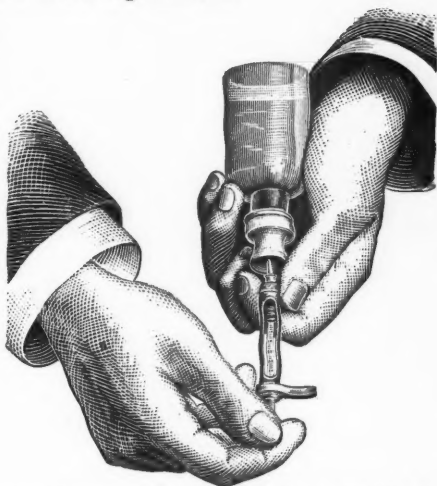
DOCTOR—You know that "necessity is the mother of invention." Is it not strange that in the history of the Hypodermic Syringe this little necessity has not hitherto been provided for the relief of one of your little longtime annoyances—the filling of a Hypodermic Syringe conveniently?

This little filler is what you want.

Saves time and trouble.

DENTAL
PROTECTIVE
SUPPLY
CO.

1101-3 Champlain Bldg., Chicago



DIRECTIONS—Fix "filler" over neck of bottle; place the needle in the small guide within the drip cup, by a slight sidewise pressure or a trembling movement easily acquired, invert as in cut and pull out the piston of the syringe.



“No. 1” ALLOY

Put up in Shavings, and Medium and Fine Filings.

PRICE PER OUNCE TROY, \$2.50.

Price Per 2 Ounces, **\$4.50.** Price Per 5 Ounces, **\$10.00.**

SAMPLE SENT ON APPLICATION.

We make this alloy by a special process which insures uniformity, and it is the result of a long series of scientific experiments.

We employ a professional metallurgist to test each batch of alloy before offering it for sale.

We have never yet found an alloy its equal for hardness, strength of edge, and entire absence of shrinkage.

DENTAL PROTECTIVE SUPPLY CO.

1101-3 Champlain Building, Chicago.

ABSORBENTS



ABSORBENT COTTON

Manufactured from purest material, being free from grease and other impurities, thereby affording excellent absorbent qualities.

Price, per 1 oz. pkt.	- \$.10
" " 2 oz. "	- .18
" " 4 oz. "	- .30
" " pound -	- 1.00

Bibulous Paper

Japanese Bibulous	
Paper, per 100 shts.	\$.30
Japanese Bibulous	
Paper, per 1,000 shts.	2.50

Cottonoid

An absorbent cotton of great value; put up in convenient strips, 12x3½ inches.

Per ¼ lb. pkt.	- 25c
----------------	-------

Selected Spunk

A most effective absorbent for sensitive cavities.

Per oz. pkt.	- - - 15c
--------------	-----------



DENTAL PROTECTIVE SUPPLY COMPANY

1101-3 CHAMPLAIN BLDG., CHICAGO.

Care should be taken that the pellet in cavity and pad in negative electrode are both kept constantly moistened *throughout operation*, as evaporation of moisture causes waste of time. Then turn on your current.

HOW TO REGULATE CURRENT.

In the case of an inflamed pulp the lever on the resistance board should *not be pushed forward beyond 7 volts*, the point of first contact. In cases, however, where it is required to extract the pulp from a healthy tooth, considerable saving of time can be effected by placing the lever at 12 or even 20 volts at commencement of operation and *very slowly* turning forward the lever on controlling board, but, *should* patient show evidence of pain, reduce current by gradually moving the lever on the controlling board *backwards* until relief is felt, avoiding by all possible means any breaking of the current during the operation. Fifteen minutes should prove sufficient in most cases to thoroughly anesthetize a tooth, when controller lever should be placed back at zero *before removing contacts*. In most cases the tooth will return to its normal condition in about 20 minutes. Should operation not be finished in that time apply current for a further 5 minutes, which will generally be found sufficient.

Thick blotting paper moistened with a saline solution makes the best conductor for the negative electrode.

HOW TO CONNECT OUTFIT WITH BATTERY.

First connect all batteries in series—that is, connect the zinc to carbon of next battery until all are connected, leaving one zinc and one carbon free to be connected to binding posts on switch-board. Attach wire leading from zinc to post marked "Z" on switch-board, and wire from carbon to post marked "C" on switch-board.

To bring Battery Outfit in use, the lever on switch-board should be placed on contact marked "On," when tooth is anesthetized throw controller handle back to zero and push lever on switch-board to contact marked "Off," otherwise your battery will continually be working and will soon wear out.

CAUTION.

Apply the current slowly; do not hurry the operation unnecessarily.

Hold applicator firmly in cavity and *avoid contact with enamel*.

When through with outfit always *turn off* the current at lamp-socket, or at switch-board in Battery Outfit.

Dental Protective Supply Co.
1101-3 Champlain Building,
CHICAGO.

INSTRUCTIONS

FOR USING

Our Cataphoric Outfit

HOW TO FIT UP.

Take the resistance board (A) and fasten up not more than 5 feet from patient, if you wish patient to operate controller.

The connecting cords from binding posts (E) on resistance board must connect with binding posts (F) on controller. It is impossible to put the plugs in wrong holes, as in each set of binding posts one hole is large, the other small, to correspond with the plugs.

The electrodes should connect with the binding posts (G).

Now screw the attachment plug into lamp-socket or connect battery, and the outfit is ready for use. To find the positive pole, take a piece of blue litmus paper (a few pieces are sent with each outfit), wet thoroughly and lay across the two binding posts (G), and if the end of paper which lies on post marked "positive" does NOT turn RED, *wires in lamp-socket plug must be reversed.* This should be tried occasionally, as the wires at station are liable to be changed.

It should be borne in mind that the current flows **from the positive to the negative** pole, and the movement of medicated solutions will be in the same direction. The negative electrode if applied to cheek will give best results, as less voltage is necessary the closer the "negative" is placed to the "positive" pole.

HOW TO CONDUCT CURRENT TO TOOTH.

Having first taken care to insulate any adjacent metallic fillings with chloro-percha that might be liable to contact, take a pellet of cotton large enough to fit tightly into the cavity, and wind very fine platinum wire around the pellet, attaching one end of this platinum wire to the positive electrode; in this way more inaccessible cavities can be reached than with positive electrode alone. After applying dam, and removing any carious dentine that can be excavated without pain, dry the cavity, and saturate your pellet with a 50% cocaine solution, warming the solution slightly when the pulp is exposed, and taking care always to use a *fresh* solution of cocaine. Insert pellet carefully in position, avoiding diversion of current by spilling solution on outside of tooth.



New Dental Chair

High-Low Gould...

This chair is one of the most complete in mechanism, construction, and finish, and is sold for less money than any on the market.

Its range is from 19½ inches at the lowest to 39 inches at its highest point; it rotates on base, has both backward and lateral tilts, while back and headrest are both adjustable. Illustration shows chair in highest position.

Prices Delivered on Board Cars at Factory

No. 54	Plain Mohair Plush, (maroon or olive)	\$125.00
No. 52	Frieze Plush	130.00
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THE DENTAL PROTECTIVE SUPPLY CO.

1101-3 CHAMPLAIN BLDG., CHICAGO.

EVERYBODY USES

Gilbert's Temporary Stopping

Or they will as soon as they try it once, as it is indispensable in a well regulated dental office. It was first designed only for temporary fillings in treated teeth, for holding medicaments while treating, but its uses have so multiplied that it is hard to say what it is not used for. Full directions with each box.

Price Per Box, 50 Cents.

Gilbert's Non-Conductive Tooth Lining.....	\$.35
(Prevents Shock from Thermal Change.)	
Gilbert's Superior Gutta-Percha, per half ounce.....	1.00
Gilbert's Zinc Phosphate Cement, one color.....	1.00
Gilbert's Zinc Phosphate Cement, two colors.....	1.50
Gilbert's White Alloy, per half ounce \$2.00, per ounce...	4.00
Gilbert's Century Amalgam, per ounce.....	2.00
(Good tooth saver—good color—does not shrink.)	

S. ELDRED GILBERT, D. D. S.

1627 Columbia Ave., Philadelphia, Pa.

I. D. C.

18th Annual Session.

New Building, Constructed by Us Especially for Dental Education.

CLINICS UNSURPASSED.

INDIANA DENTAL COLLEGE,

Send for Catalogue.

INDIANAPOLIS, IND.

DR. PETERSON'S MATRICES. SAVE TIME, PAIN, MATERIAL TRANSPARENT, FLEXIBLE, SELF-RETAINING	IMPROVE YOUR OPERATING 50 IN A BOX 50¢ ASK DEALER  OR SEND TO (PAT. AUG. 28 '95) C. J. PETERSON D.D.S. DUBUQUE IA.	TESTIMONIALS HEARTILY RECOMMEND THEM I. P. WILSON D.D.S. BURLINGTON IA. CANNOT KEEP HOUSE WITHOUT THEM A. H. MC CANDLESS D.D.S. ROCK ISLAND ILL. ONCE USED ALWAYS USED F. B. CLARK D.D.S. DUBUQUE IA. VERY MUCH PLEASED WITH THEM. J. H. KENNERLY D.D.S. ST. LOUIS MO.
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"THE BEST STRIP MADE."

Dr. Howard's Dental Finishing Cloth Strips.

Made in four grits—Coarse, Medium Coarse, Medium, Fine, and in three widths Broad, Medium, Narrow. Put up mixed or separate, as desired, in boxes containing an amount equal to one gross, of medium width, seven inches long. Send for them if your dealer does not keep them. Manufactured only by

CHAS. T. HOWARD, - - - ROCHESTER, N. Y.

Repair Work



DOCTOR: We can guarantee Repairs with promptness, first-class workmanship, and at moderate prices. It's a fair offer. Why not select from your stock instruments requiring repair, and have them put in *good shape for the new year?* Write your *name* on the package, and mail it to us, or hand to our traveler.

CASH PRICES

CAVITY BURS RECUT AND STONED **60c** Per Dozen

	Per Dozen.
Finishing Burs, recut and stoned	\$1.20
Excavators Repointed	75c to 1.00
Pluggers Reserrated	1.50
Nickel Plating Forceps	50c each

WE MAKE A SPECIALTY OF HANDPIECE REPAIRING

Estimates given of cost of all Repair Work so that cash can be forwarded.

The Dental Protective Supply Company
1101-3 Champlain Bldg., Chicago

WANTED

A..Time and
Pain Saver

APPLY

The
“ Dual Blade Bur ”

\$2.00
Per Dozen.

...Sample Bur on Application...

DENTAL PROTECTIVE SUPPLY CO.

— 1101-3 Champlain Building, Chicago.

MODERN DESIGN.
BEST WORKMANSHIP.



Patented October 12, '95.

Weight of Driving Wheel, 13 lbs.

Diameter of Driving Wheel, 12 in.

“No. 1” Dental Engine

With Fourteen Instruments and Oiler.

PRICE, \$38.00

Boxing 75 cents extra.



STUDENTS requiring the best value for their money will recognize the efforts we are making to supply their wants by furnishing a highly finished Dental Engine of modern design at moderate cost.

This Cable Arm Engine, supplied with our No. 1 Handpiece, is constructed upon correct mechanical principles, and is the easiest running Dental Engine made.

The Drop Pulley Head is supplied with long bearings, insuring steady running. The Hub, as will be seen in the cut (C), is chambered so as to center weight of wheel. It will be seen also that the Engine is supplied with a rocking standard or upright.

A slight upward toss of the cable raises the arm into position. Pressure on the thumbpiece at (A) lowers it.

We supply a flexible Sleeve and Nickel Plated Water Cup with every Engine.

**The Dental
Protective Supply
Company,**

1101-3 Champlain Building, Chicago.



Patented Feb. 5, '95

“No. 1” Handpiece

Designed and Manufactured by

The Dental Protective Supply Company.



A glance at the accompanying cut illustrating this Handpiece will demonstrate the simplicity of its mechanism.

We have endeavored to design and place before the profession the most simple and durable Handpiece made.

The special features of the Handpiece are the double end chuck, the improved locking device, and long and efficient bearings.

Ample provision has been made for taking up all wear, and we guarantee that if the bearing surfaces are kept clean and well oiled, this Handpiece will last for years and prove the best that has ever been placed upon the market.

It is adapted to hold different forms of bit shanks (except cone journal) which can be inserted or taken out from the Handpiece while the engine is in motion; it is also designed so that it can be attached to any Dental Engine, and will fit all ordinary right angle attachments.

Owing to the entire absence of screws the Handpiece can be taken apart without the use of wrench or screwdriver, and is so constructed that escape of oil upon the hand of the operator—an objectionable feature in some Handpieces—is entirely avoided.

In ordering our No. 1 Handpiece it is essential that you give all necessary particulars as to the style of your engine and attachments.

PRICE \$10.00

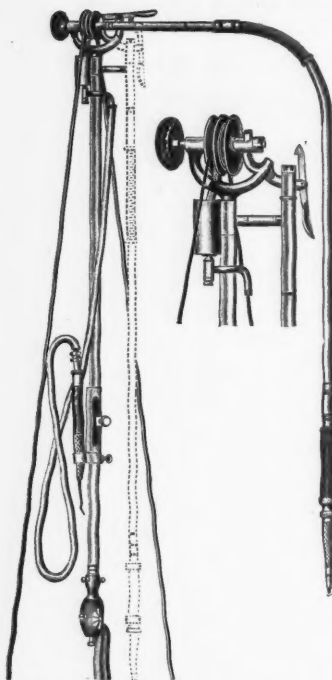
ORDER DIRECT FROM

**The Dental
Protective Supply
Company,**

Chicago, Illinois.

The Harris Pneumatic Mallet and Engine Head

Some of its Principal Advantages are:



1st. The Engine Head can be used on our No. 1. Dental Engine and readily adapted to almost every other make of Dental Engine as well as to all brackets run by Electric Motors.

2d. The power is readily transferred from engine to mallet or from mallet to engine, at will of the operator, without stopping the engine or motor, by simply throwing the band from one pulley to the other with the finger, leaving the one piece of machinery at rest while the other is in motion.

3d. It gives a sharp, distinct blow and may be run at any degree of speed up to 2,500 blows per minute.

4th. The length and force of blow can be increased or diminished by moving the extension rod in or out.

5th. The blow being always under the control of the operator's thumb and finger, may

be entirely suspended at any instant, thus stopping the action of the mallet without stopping the pump.

6th. The bit is so adjusted that it gives a blow on the gold without pressure, thereby allowing the plugger to be freely moved over the surface of the filling without lifting on the instrument.

Price for Head alone - - \$15.00

Price for Mallet and Head (Complete) 25.00

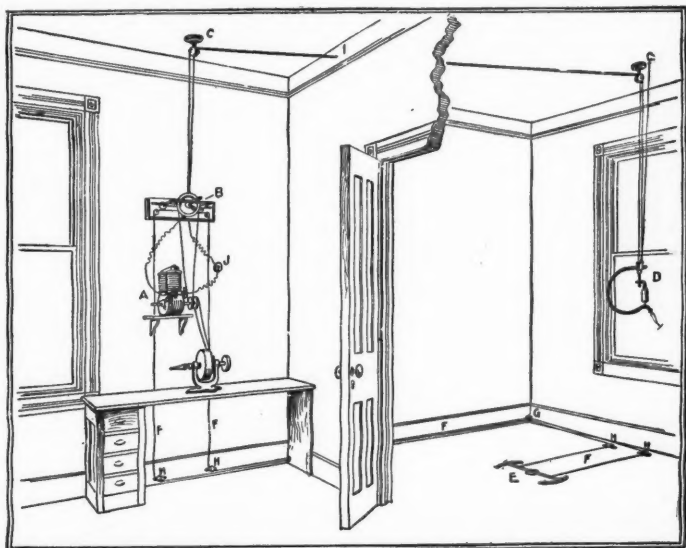
The Dental Protective Supply Company

1101-3 Champlain Building, Chicago

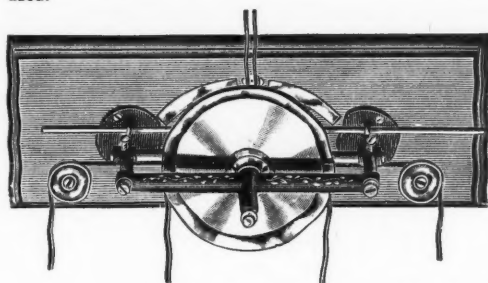


DENTAL ENGINE...

Run by Electric or Water Motor. If desired, same motor can be used to run the lathe in laboratory.



This cut shows the engine, with the motor placed in the laboratory for use in running the lathe, the suspended head hanging in the operating room. No chair is shown, so that the position of the footswitch on the floor can be better seen. Chair is supposed to stand over switch, or in front of it in case a large base chair is used.



DENTAL ENGINE SPEED REGULATOR AND REVERSING ATTACHMENT

Applicable to any kind of power.

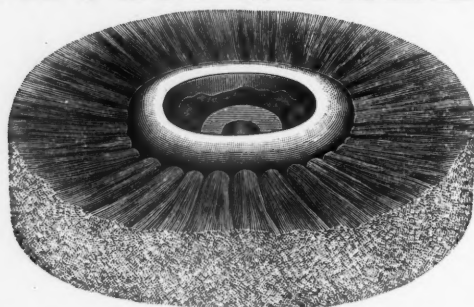
Highest award at
World's Columbian
Exposition in 1893
at Chicago.

L. J. MASON & CO.

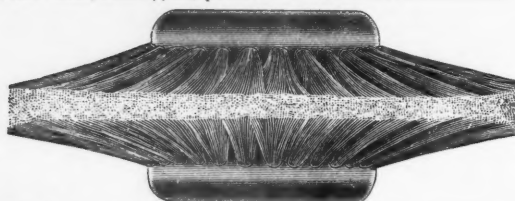
Manufacturers of Suspension and Bracket Engines and a General
Line of Dental Instruments. Established 1884.

Depot and Factory—79-81 Fifth Ave., Chicago, Ill. Send for Illustrated Catalogue.

BRUSH WHEELS.



No. 26. Soft, size $2\frac{3}{4}$ in., price..... 34



No. 27. Converging, stiff, 3 in., price..... 44



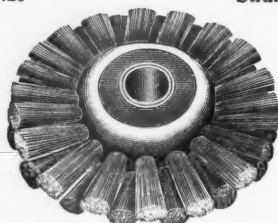
No. 1. Tooth Brush Wheel,
Bone center, price .20



Tooth Polishing Brush,
Per doz. .30. Each .03.



No. 2. Tooth Brush Wheel,
Straight, bone center, price .25



Steel Wire Bur Brush, size $1\frac{5}{8}$ dia., price 50c.
With Mandrel complete, price 75c.

The above cuts represent samples of the Brushes we keep in stock—various other sizes can be supplied on application.

DENTAL PROTECTIVE SUPPLY CO.
CHICAGO, ILL.

Fuses at 2600
degrees
Fahrenheit

Platinoid

22 Kt. Gold
Solder can be
used.

A SUBSTITUTE FOR PLATINA

Pins and Screw Posts for Crowns.

Three pieces, three inches square, assorted gauges, for Crown and Bridge Work

ASK YOUR DEALER
OR SEND TO

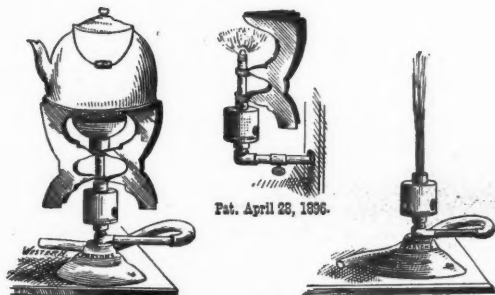
\$1.00

MANHATTAN DENTAL COMPANY

745 Sixth Avenue, New York.

A New Gas Stove

For Dentists and Physicians



Parsons Combination Gas Stove.

The accompanying illustrations show only some of the many uses to which this useful stove may be put; it is an indispensable addition to the laboratory and can be attached to any gas jet—uses the same amount of gas as an ordinary gas burner—gives a fine light—can be used for soldering purposes, and by opening the steel wings is converted at once into a stove giving a constant steady heat.

Made of Solid Brass, polished
and bronzed. Price, complete **\$2.00**

For Sale by

Dental Protective Supply Company

1101-3 Champlain Bldg., Chicago.

RUBBER DAM

Medium Or Thin,
Smooth Or Corrugated.

PRICE \$1.00

PER ROLL.

Rubber Dam, medium or thin, per roll - - \$1.00

Rubber Dam, heavy, smooth, 5 in. wide, per roll 1.25

**Rubber Dam, heavy, corrugated, in rolls 15 ft. long
by 6½ in., per roll - - - - - 1.25**

**ALSO A LIGHT-COLORED RUBBER DAM,
TOUGH AND ODORLESS,**

**Twenty-five sheets, size 6x9 in., medium corrugated,
and thin or medium smooth, per box - - 1.50**

The Dental Protective Supply Co.

1101-3 Champlain Bldg., Chicago, Ill.

GOULD DENTAL CHAIR.



Fig. IV Normal.

We would merely call your attention to a few of its Advantages over all other Dental Chairs:—

- 1st. The Gould is the only first class low priced chair.
- 2nd. The Gould is the only low priced pedal lever chair.
- 3rd. The Gould has more and better movements than any high priced chair made.
- 4th. The Gould is the only chair that has the Horizontal Anæsthetic Position.
- 5th. The Gould is the only chair that has the Chloroform Narcosis Position.
- 6th. The Gould is the only complete chair, requiring "no extras."
- 7th. The Gould obtains all the positions secured by other chairs and more.
- 8th. The Gould chair has the most satisfactory head rest made.
- 9th. The Gould is the only chair made that gives you the side tilt without "extra cost."
- 10th. The Gould is the simplest and therefore the easiest to keep in order.

11th. The Gould is the only chair with which an Elegant Nickel Spittoon is furnished Free.

12th. The Gould is the only chair that can be tilted forward for taking impressions.

13th. The Gould is more convenient to the operator than any other.

14th. The Gould gives satisfaction when others fail.

15th. The Gould is the best and cheapest chair in the world.

16th. The Gould is sold on its merits and is warranted to be as represented.



Fig. XVIII Chloroform Narcosis.

CANTON SURGICAL AND DENTAL CHAIR CO.,

38 to 54 E. Eighth and 50 to 54 S. Walnut Sts, CANTON, OHIO.

Sole Manufacturers Gould Dental, Gould Motor Dental and "Yale" Surgical Chairs, Electric Dental Engines and Brackets, Fletcher Fountain Spittoons, Foot Power and Electric Cord and Cable Dental Engines, etc., etc.

PATENTS

Promptly secured. Trade-Marks, Copyrights and Labels registered. Twenty-five years experience. We report whether patent can be secured or not, free of charge. Our fee not due until patent is allowed. 32 page Book Free. **H. B. WILLSON & CO.,** Attorneys at Law, Opp. U. S. Pat. Office. **WASHINGTON, D. C.**

Call or write and you will receive prompt attention.

HORACE JONES DENTAL DEPOT,

12 Union Square, East, NEW YORK

Has constantly on hand a stock of

THE DENTAL PROTECTIVE SUPPLY CO.'S

"Dual Blade" Burs.

"No. 1 Alloy."

"Lithos"—a zinc phosphate cement.

"No. 1" Engine.

English Teeth.

Cataphoric Outfits.

PRIZE WINNERS
IN THE
"Borolyptol"
(FORMOLYPTOL)
LITERARY
CONTEST

1st Prize, \$200.00 in cash.

C. Bunting Colson, M. D. D. S.,
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2d Prize, \$100.00 in cash.

Will A. Pressley, D. D. S.,
Rock Hill, S. C.

3d Prize, \$60.00 in cash.

L. P. Bethel, M. D., D. D. S.,
Kent, Ohio.

4th Prize, \$40.00 in cash.

G. S. Martin, D. D. S.,
Toronto Junct., Ontario, Canada.

The various essays were, with but few exceptions, of a high order of excellence, both from a scientific and literary standpoint. We have been much gratified to note the interest to which this competition has given rise and desire to extend our thanks to each and every contestant, whether successful or otherwise.

A pamphlet containing the successful essays with portraits of the authors is now in press. It is being printed on good paper and in legible type, and will be mailed, together with a handsome fac-simile of Prize Painting in 14 colors, suitable for framing, to every physician sending his request for same to

THE PALISADE M'F'G CO.
YONKERS, N. Y.

ESTABLISHED 1845.

Ohio College of Dental Surgery

DEPARTMENT OF DENTISTRY
UNIVERSITY OF CINCINNATI.

Northwest Cor. Court and Central Ave., Cincinnati, Ohio.

FIFTY-FIRST ANNUAL SESSION BEGINS

OCTOBER 6, 1896,

AND CLOSSES APRIL 6, 1897.

For information or announcement, address

H. A. SMITH, D. D. S., Dean,
or **H. T. SMITH, D. D. S., Secretary,**
128 Garfield Place, Cincinnati, Ohio.



Attention of the profession is called to the above new Moulding Compound outfit, the only competitor of Melotte's Mouldine. It is unequalled, is guaranteed, and a trial is solicited.

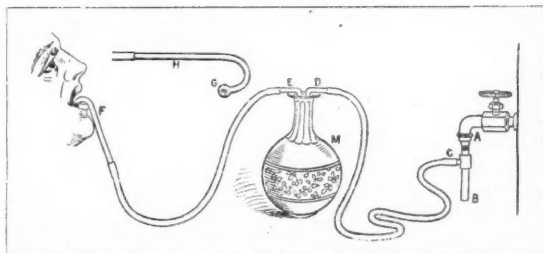
The Perfect System of Crown and Bridge Work, the simplest, yet most perfect of all systems, by the use of this outfit, may be adopted. Explicit instruction accompanying each package.

Price of outfit, complete, **\$1.00.** Postage, **16c.**

Fusible Metal, **25c.** per ingot. Postage, **3c.**

This Metal is adapted to use with Melotte's Mouldine, and in all cases where a low fusing alloy is required. All orders promptly filled by **The Dental Protective Supply Co., 126 State St., Chicago, Ill.**

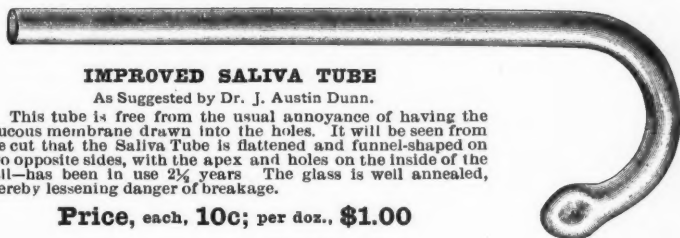
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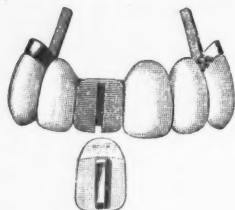
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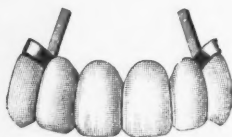
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Three full winter courses of lectures are required before graduation. Graduates of pharmaceutical and undergraduates of medical colleges in good standing and graduates of reputable veterinary colleges are admitted to the second year course, and can become candidates for graduation after taking two full winter courses of instruction.

GRADUATION IN MEDICINE.

Graduates of the Chicago College of Dental Surgery will be admitted to the medical colleges, and may become candidates for graduation in medicine after attending two full courses of lectures.

Graduates of the Chicago College of Dental Surgery are excused from the lectures on anatomy, physiology and chemistry, from chemical and histological laboratory work and dissecting.

Students desiring to graduate in medicine are required to notify the Dean in writing of their intention at the beginning of their second course.

Course of instruction in this institution is graded.

TOPICAL STATEMENT OF WORK.

First Year.

During the Freshman year the studies taken up are: Theoretical and Practical Chemistry, Anatomy, Physiology, Materia Medica, Dental Anatomy, Histology, Operative and Prosthetic Technics and Operative and Prosthetic Dentistry.

Recitations in this course are conducted daily in commodious rooms specially arranged for this method of teaching. Stated lessons assigned from approved textbooks supplement the didactic lectures and work in the laboratories.

Second Year.

During the Junior year students complete the work in Anatomy, Physiology, Chemistry, Histology, Pathology and Bacteriology and Materia Medica. In addition to this they receive instruction in Comparative Dental Anatomy, Crown and Bridge Work, Regulating Appliances, Splints and all kinds of Plate Work, and operate in the Infirmary.

Third Year.

During the Senior year the students listen to lectures on Oral Surgery, Therapeutics, Operative Dentistry, Dental Anatomy and Pathology, Orthodontia, and attend Clinics. In addition to the lectures each student is required to operate in the Infirmary and perform practical work in the Laboratory.

Matriculation Fee, good to the close of the term. \$ 5.00

General Ticket. 100.00

There will be no separate fees for Chemical and Histological Laboratory work, dissecting and final examinations, as heretofore.

FEES FOR THE ANNUAL SPRING AND SUMMER COURSE.

Matriculation Fee, good till the following April. \$ 5.00

Tickets for the Course 20.00

This amount will be deducted from the fees of the next following winter session.

Instruments and appliances for clinical department will cost from \$25 to \$40.

Board, including light and fuel, can be obtained at a convenient distance from the College at from \$2.50 to \$4 a week.

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A fee of \$5 must be deposited to cover chemicals and breakage in the Chemical Laboratory.



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The entire six floors of the building are divided into lecture rooms, class rooms, clinic rooms, etc., with the exception of the second floor, which is devoted to the Dental Infirmary. The chief lecture room has a seating capacity of four hundred and fifty students. There is also a dissecting room, thoroughly equipped with all the requisites for the study of human anatomy.

There are Histological, Chemical, Bacteriological Laboratories, also Laboratories for the study of Operative and Prosthetic Techniques, and one for the construction of artificial dentures.

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This College has accepted the requirements of the National Association of Dental Faculties with regard to admission and graduation of students. (See Announcement for 1896-97, which can be procured from the Dean.)

The Spring and Fall Sessions.

THE SPRING COURSE commences on the first Monday in April and continues until June 20. Fee \$30, which will be credited upon the fee for the regular session.

THE FALL COURSE will commence on September 1, and continue until October 1, and will be free to those who matriculate for the regular session.

Attendance upon the Spring and Fall Courses will be deemed equivalent to the term of pupilage under a private preceptor.

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will commence on October 1, 1896, and continue until the 1st of April ensuing. Twenty lectures will be delivered each week on the various branches taught.

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- (4) The inauguration, during the lecture session of 1894-'95, of graded courses of practical work in sub-classes, for the first year class, the second year class, and the third year class, respectively.
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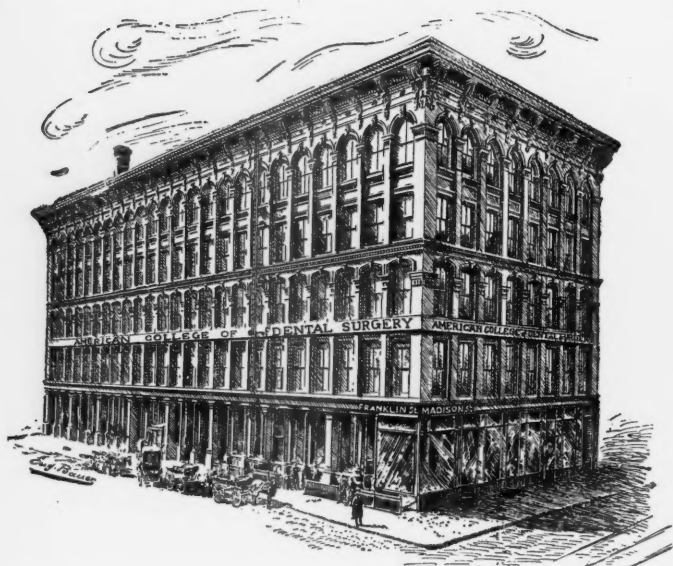
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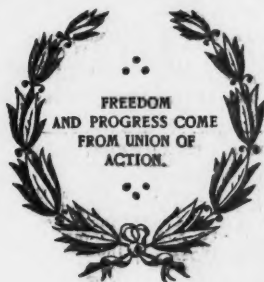
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The
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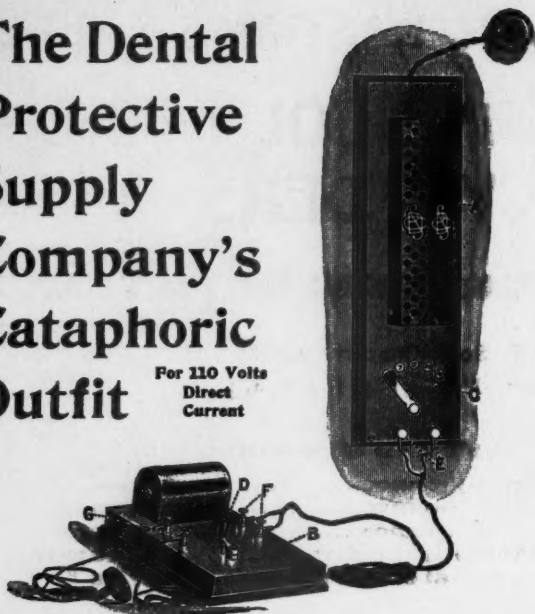


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